

FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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Flight.

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EDITORIAL COMMENT.

France and Military Aviation.

For some time past as has been reflected in these columns, there have been whispers abroad to the effect that all is not well in the French administration of the military aerial department, and, if the aeronautical correspondent of the *Daily Telegraph* is right in his facts—and there is collateral evidence to show that he is—there have indeed been grave abuses which have crept in. Referring to the reports of laxity and maladministration, to call these things by their least offensive names, our contemporary says—and the matter is of such capital importance that we make no apology for quoting him very fully:—

“These rumours were founded on fact, and I am in a position to assert that a scheme of wholesale reorganisation has lately been decided upon, and will shortly be carried into effect. The main outlines of this drastic measure, of which nothing is yet publicly known in France, are as follows:

“Quite recently Gen. Hirschauer has been replaced by Gen. Bernard, and it is to the latter that the impending alterations are understood to be due. Hitherto France and Algeria have, for purposes of military aviation, been divided up into five zones, each comprising one territorial centre, including a training school and depôt, and a large number of sub-centres. Again, until the spring

of this year, aviation in the French army formed a separate, self-contained branch of the service, whose head, the Inspector-General, was directly responsible to the Minister for War. Under him were placed the commanders of the airship and aeroplane sections. The latter was divided into a number of squadrons, each homogeneous in that it comprised aeroplanes of a similar type, which were apportioned, according to the requirements of the moment, between the various zones.

“But the system worked unsatisfactorily; untold abuses crept in, and were revealed one by one. This spring it was decided to cope with the situation by placing the various aeroplane centres and squadrons directly under the command of the several army corps commanders, thereby subjecting them to more rigid military discipline and effective inspection, the while placing a check on the paramount influence of the great firms of aeroplane constructors.

“The latter exerted a pernicious effect on the aeroplane establishment, which in some cases assumed the proportions of a scandal. And this mainly through the medium of the national aerial subscription, since imitated in more than one foreign country. By means of this subscription a number of manufacturers unloaded upon the army whole series of out-of-date aeroplanes, or others in which work had been scamped to a scandalous degree. But these aeroplanes, being a gift, had perforce to be accepted, under the penalty of affronting public sentiment and opinion. The evil also assumed other forms, such as the payment by manufacturers to military pilots flying their machines of considerable sums for making cross-country flights, which were subsequently extensively advertised in the Press, and alleged inducements offered to pilots to break up machines with a view to receiving an order for replacement. The result is that many of the aeroplanes that figure upon the establishment of the French flying corps are in a deplorable condition.

“Drastic measures were required to meet the situation and to arrest the evil. These have now been taken. In future the aerial establishment of the French army will be included in two regiments, stationed respectively at Châlons and Dijon. The whole series of aviation centres and sub-centres will be suppressed at one blow, saving only those at St. Cyr—where are situated the main depôt and the military laboratories—at Dijon, at Port d'Avor, near Lyons, and at Pau, the latter being intended chiefly for use in the winter. The aerodromes in existence at all the other centres, whether hitherto created by the military authorities or presented through the national subscription or through local effort, will be retained, but only in the guise of aerodromes or alighting grounds pure and simple. They will play no further part in the scheme of military organisation.

“But these reforms will be accompanied at the same time by an even more radical step, by which a great blow will be aimed at the French aviation industry, which, with a few exceptions, to-day lives entirely on orders placed by the army. For it has been decided to strike off the list of Government contractors seven of the principal firms of aeroplane constructors, including some of the most famous names in the world of aviation. This step has been necessitated not so much by past contraventions of commercial rectitude, such as have been alluded to already, as by sheer business inefficiency. Delays in delivery of aeroplanes have in the past been a continual source of complaint, and have persistently militated against the formation of those homogeneous squadrons which

constitute an essential and wholly admirable part of the French scheme of organisation."

Certainly such a state of things as set forth by the *Daily Telegraph's* contributor is a deplorable one, and the French Government and the Army are much to be sympathised with in the manner in which corruption and abuse have apparently been allowed to gain access to the ranks of the new arm. However, we will not presume to labour that point. It may well be that the self-righteous critics on this side of the Channel may say that it is as well that there are some things which are done in France which do not find imitation here. Further, we ourselves may be told that our holding up of France as the pattern whereon we should base our own ideas of aerial defence has ceased to be to the point, in the light of these revelations. While there cannot be any getting away from the fact that all these disclosures reflect a great deal of discredit on those concerned with them, there is yet an object-lesson contained in the immediate and drastic action of the Government which may still serve as an example to us. That is the stern determination that, by any means and at all costs, France shall maintain her lead over the countries of the world in this most important and essential branch of military activity. France will make any sacrifice; she will weed out with ruthless hand any thing or person which stands in the way of development, with a true singleness of purpose which is admirable to a degree. Without any lapse into the attitude of the Pharisee, we may say with some amount of proper pride that corruption such as has been disclosed in the article from which we have quoted does not, and cannot, exist in this country, and for that we think that Great Britain is entitled to take pride in herself. But, on the other hand, we are afraid that that singleness of purpose to which we have referred does not exist in the same degree that it does in France. We would that it did.

So far as concerns the future of military aviation in France, it may well be that what has happened, and is in

process of happening, may, after all, be for the good of the service. As gold gains in the refining process, so it may be that once France has learned her lesson she may gain materially from this early lesson which has been forced upon her.

A Word of Warning.

In view of statements appearing in the Press that another English aviator was going to attempt upside-down and other similar flights on his Blériot, perhaps it is not out of place to mention here that these flights have been accomplished by both M. Pegoud and Mr. Hucks on monoplanes specially equipped for the purpose. The *fuselage* of the machine on which M. Pegoud accomplished all his extraordinary flights was, it is true, an old one with the same motor and landing chassis that were in the machine when first constructed, but this *fuselage* had been thoroughly overhauled at the Blériot Works, and the wings, stabiliser, top pylon, cables, warping, etc. modified according to the latest ideas and practice of M. Blériot for the construction of what he called the "Air-lifeboat."

In fact Mr. Hucks, who had previously flown an old 50 Blériot single-seater and a new 70 and 80 Blériot tandem, assures us that the stability of this new 50 h.p. type is absolutely marvellous, and far ahead of anything previously tried by him.

It therefore follows that any attempt to try these, at present, extraordinary flights, should not be made on an old type of machine without having it thoroughly overhauled and brought up to date by the manufacturers, who are thoroughly conversant with the necessary alterations, as attempts made under other conditions might end in an accident, and, as it is most probable that the circumstances would not be properly explained in the reports, a great deal of harm would result to the whole aviation movement, and might put a period to a great advance in aerial navigation. *Verb. Sap.*

REGINALD H. CARR.

PILOT.

ALTHOUGH it is true that the date on Carr's pilot's certificate is only June 2nd of this year, regular visitors to Hendon will remember that he has been a "man of moment" just about as long as the London Aerodrome has been open. For away back in the early days he was Mr. Grahame-White's *mecanicien*, and he has always appeared to have a wonderful power over aero engines—especially the Gnome. At tuning up a refractory motor, Carr could beat the expert French mechanics, and it was seldom indeed that an engine failed to give her best when he swung the propeller. In the course of his duties he had a good deal of flying in the passenger's seat, as he would often take a trip on the machine to make sure that the engine was really in tune. He also accompanied Mr. Grahame-White on several of his journeys, among them being one across the Channel on a waterplane. So that, taken all round, Carr has probably forgotten a great deal more about flying than most pilots know when they qualify for their *brevets*, and the test flights

were little more than a necessary formality to him. During the last few months he has proved himself a very fine biplane pilot by his masterly handling, in all sorts of weather, of the 50 h.p. Grahame-White. It will be remembered that he finished second in the exciting speed handicap which was flown at the Night Flying Meeting at Hendon on November 6th, beating Manton by $\frac{1}{8}$ sec., and only failing to catch Noel on the M. Farman by 1 sec.

Quite latterly he has been doing a good deal of flying on the Grahame-White five-seater *char-à-bancs*, and it was on this machine, now fitted with a 100 h.p. Green motor, that he secured the British Empire Michelin Cup No. 1, by flying, with a passenger, for over 15½ laps of the Hendon-Brooklands course, the distance being over 300 miles. Again this week, on the same machine, when trying for the Michelin Cup No. 2, although beaten by the gale which raged on Wednesday, he put up a very fine cross-country flight with a passenger. "THE HAWK."

Commander Cumming Qualifies.

COMMANDER MANSFIELD CUMMING, R.N., a member of the Royal Aero Club, has just returned from the Farman school at Etampes, where he qualified for his aviator's certificate on a Maurice Farman biplane on Monday, November 10th, 1913. Commander Cumming is probably the *doyen* of pilots, his age being 54 years.

He does not believe in extreme youth as a necessary or even desirable qualification for the making of a successful pilot.

Mrs. Stocks Leaves Hospital.

It is good news to hear that, on Monday, Mrs. de Beauvoir Stocks was able to leave the Central London Sick Asylum, Hendon, where she has been an inmate since the smash on September 20th.

MEN OF MOMENT IN THE WORLD OF FLIGHT.



MR. REGINALD H. CARR.—Winner of the British Michelin Cup No. 1 for 1913.

FLYING AT HENDON.

ONCE again success has crowned the beginning of the winter season at Hendon, for the meeting last Saturday, which was held in honour of the Olympia Motor Show, produced an exceptionally fine speed contest for the Shell Trophy and 50 guineas in prize money. The prominent feature of the race was the marvellous performance of the new 80 h.p. Avro biplane, piloted by F. P. Raynham, the same machine he flew in the Brighton race. Prior to his arrival at Hendon, Raynham had made a splendid flight from Brooklands to Farnborough and back, the latter journey taking only seven minutes for the 15 miles, making a speed of nearly 125 m.p.h. Afterwards he went on to Hendon, where he arrived at 2.30 p.m., accompanied by Mr. Dukinfield Jones as passenger. During the race later on he put up some records for Hendon by completing the six laps in 7 mins. 27 secs. and the eight laps in 9 mins. 34½ secs., in the latter case a speed of over 73 m.p.h., thus eclipsing the performance put up by Brindejonc des Moulinais on his 80 h.p. racing Morane-Saulnier monoplane! Surely Mr. A. V. Roe will not have to wait long now for a large Government order?

Immediately after Raynham arrived, Marcus D. Manton went up on the twin-rudder 50 h.p. G.-W. 'bus, R. H. Carr following shortly after on one of the older 'buses. A little later Louis Noel on the G.-W. Maurice Farman, W. L. Brock on the 80 h.p. Blériot, W. Birchenough on the other G.-W. 'bus, N. Spratt on the 85 h.p. Breguet, E. Baumann on the 60 h.p. Caudron, Manton with a passenger on the 'bus, Pierre Verrier on a new Maurice Farman, and Robert Slack on the 80 h.p. Morane-Saulnier, all ascended in quick succession, and made flights of varying durations. At one time about six machines were in the air together. Noel and Verrier were practising the latest Maurice Farman stunt-soaring. This consists of bringing the machine head to wind and throttling down the

engine sometimes until it is almost stopping, with the result that when there is a strong wind blowing the biplane is practically stationary, in fact, sometimes drifting *backwards*. This is quite an interesting, and at the same time pretty performance. Verrier made one of his impressive descents with his engine stopped, executing several circuits before landing. H. Salmet also came out on his Blériot. Further flights were made by Spratt with a passenger, and Manton, whilst Carr brought out the 100 h.p. Green G.-W. five-seater on which he secured the Michelin prize, and G. Lee Temple demonstrated the strength of the wind by hovering overhead at an altitude of some 4,000 ft. Lieut. Rathbone, R.N., tested a Maurice Farman, and just before the race started Gustav Hamel, accompanied by Baron Gunzberg, left on his 80 h.p. Morane-Saulnier for Kenwood, near Hampstead Heath, the residence of the Grand Duke Michael of Russia. After staying there nearly an hour, where he was most hospitably received, Hamel returned with his passenger to Hendon. At 3.30 p.m., a start was made for the Shell speed handicap. The first heat of six laps was made up of W. Birchenough on the old 50 h.p. G.-W. 'bus (4 mins. 50 secs.), Marcus D. Manton on the new 50 h.p. G.-W. 'bus (3 mins. 30 secs.), P. Verrier on the 20 h.p. Maurice Farman (1 min. 20 secs.), N. Spratt on the 85 h.p. Breguet (40 secs.), and R. Slack on the 80 h.p. Morane-Saulnier (scratch). Birchenough kept ahead all the time, and came home an easy winner. Verrier came in second, with Slack 7 secs. behind. Spratt, who flew very low on the Breguet, came in 46 secs. after, while Manton, who had trouble at the start with Birchenough's backwash, flew high to get out of the way, but did not give up, and came in last. The second heat also produced five starters, viz., R. H. Carr on the 50 h.p. G.-W. 'bas (5 mins. 18 secs.), Louis Noel on the 70 h.p. G.-W. Maurice Farman (3 mins.), W. L. Brock

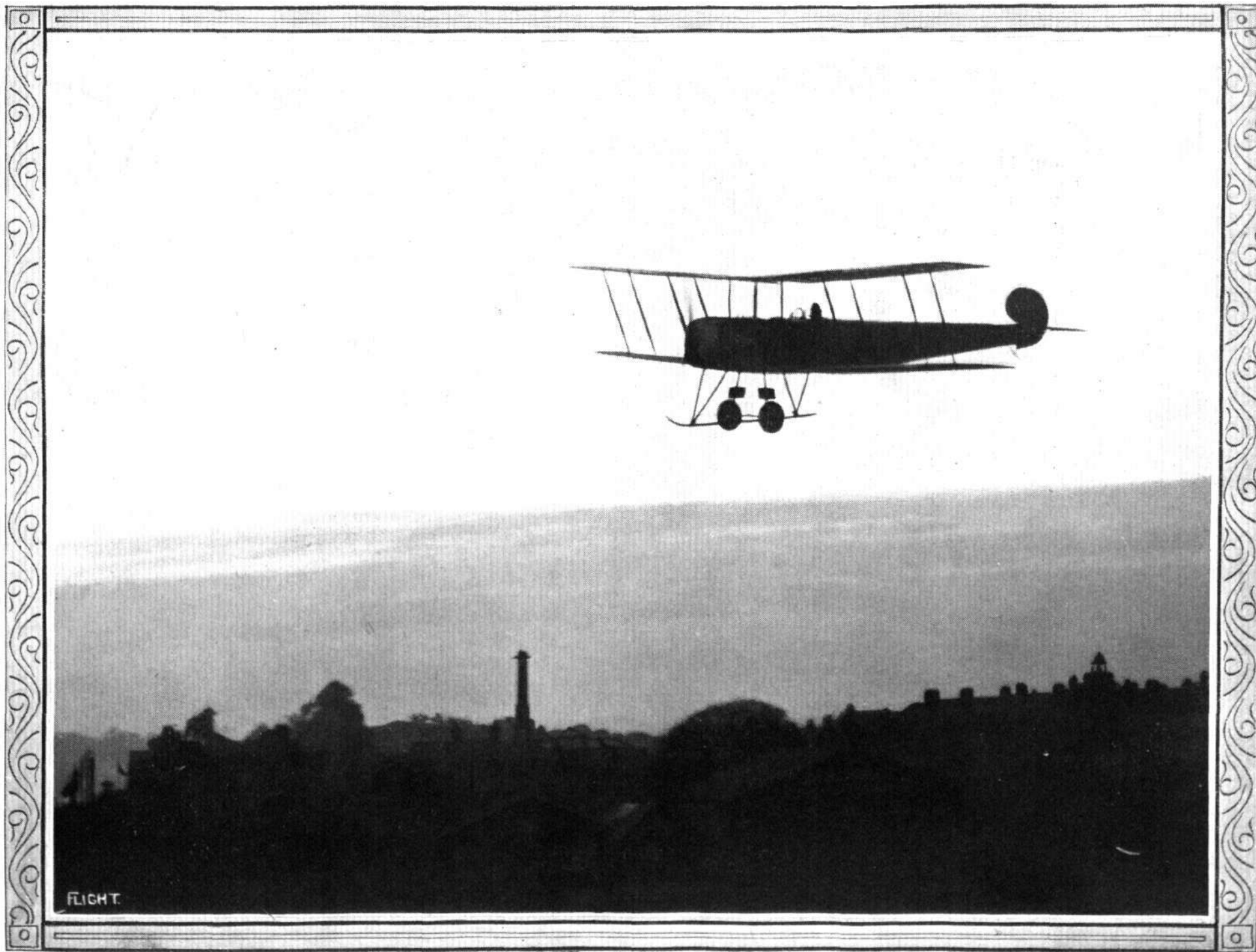


R. H. Carr, the Hendon aviator, at the wheel of the Grahame-White all-British "aero-bus," with which he has just won the British Michelin Trophy and £500. The passenger, seated behind, is the engineer who accompanied him on his flight. Mr. Carr is making an attempt this week for the Michelin Cross-Country Speed Competition, the trophy for which carries with it a prize of £800.

Photo by F. N. Berkett.

NOVEMBER 22, 1913.

[FLIGHT]



"Flight" Copyright

Mr. F. P. Raynham on the remarkable new Avro biplane on which he made such splendid speed flights in the competition at Hendon on Saturday. Our picture shows Mr. Raynham at sunset, in the final for the Shell Trophy, which he only missed winning by a "head."

on the 80 h.p. Blériot (53 secs.), P. Marty on the 50 h.p. Morane-Saulnier (38 secs.), and P. Raynham on the 80 h.p. Avro (scratch). It will be seen that the rather unusual incident of a biplane giving a monoplane a start took place in this handicap. Marty was put out of action at the start, for as he was getting away the tail rose too high and the propeller struck the ground, smashing with a report like that from a gun. Little damage was done, however, and the machine was quickly moved out of the way. Raynham got away with remarkable rapidity, and completed lap after lap at an astonishing speed, apparently passing all the others a great number of times, for they had completed so many laps before Raynham started, that it was difficult to compare their relative positions. However, at the finish he rapidly overhauled Brock and Noel, who were leading, and came in first, with Brock 8 secs. behind, Noel getting in third by 10 secs. Noel flew low and close during the latter part of the heat. Great excitement prevailed at the start of and during the final heat of eight laps, for the second heat gave an anticipation of great things to come. The limit man was Birchenough (8 mins. 17 secs.), Verrier starting next (3 mins. 3 secs.), Brock third (1 min. 35 secs.), and Raynham was again at scratch. As before, it was difficult to follow the relative positions of the machines, and even at the finish it looked as though Birchenough would be an easy winner, for, although Brock was not so very far behind, Raynham had nearly a third of a lap to go when Birchenough was entering the "finishing straight." The Avro, however, came up at an incredible speed, and drew abreast of the school bus, which practically won by "an elevator's length," or, to put it exactly, $\frac{1}{8}$ sec. Brock came in third, $6\frac{1}{2}$ secs. after Raynham, whilst Verrier retired after having completed six laps. The gathering darkness added considerably to the excitement of this heat, which

was certainly the most sensational one seen at Hendon for some time. There is not much doubt that had Raynham not lost a little at the start owing to his having to keep clear of Birchenough, who happened to be in front, he would have just won the race—but these are the little things that go to make the Hendon races so interesting.

The Shell Speed Handicap. Final Heat (8 laps).

	Handicap.	Handicap
	m. s.	m. s.
1. W. Birchenough (50 h.p. Gnome-G.-W. biplane)	8 17	17 51 $\frac{3}{4}$
2. F. P. Raynham (80 h.p. Gnome-Avro biplane)	scratch	17 51 $\frac{3}{4}$
3. W. L. Brock (80 h.p. Gnome-Blériot monoplane)	1 35	17 58
4. P. Verrier (70 h.p. Renault-Maurice Farman biplane)	3 3	retired

A good display of flying took place on Sunday in fine but slightly hazy weather, with a gentle south-easterly wind. There was a very good attendance, and much was done in the way of passenger flights. The pilots, who were kept busy in this direction, were: Pierre Verrier and Louis Noel on Maurice Farmans, Marcus D. Manton and W. Birchenough on G.-W. buses, and R. H. Carr, who piloted the 5-seater, making several flights with full cargo aboard. G. Lee Temple was out on his Blériot, making high flights, terminating in vertical dives, which reminded one of Pegoud. W. L. Brock was also up high on his Blériot. Raynham, after a fine display in the aerodrome on the Avro, left for Brooklands at 3.30.



AERIAL NAVIGATION ACTS, 1911 AND 1913.

CLEARANCE

Name and Registered Number of Aircraft: *Etrich-Taube No. 2.*

Type: *Monoplane (4-seater)*

Name, Nationality and Place of Residence of Owner: *Georg Etrich, German, Hermannstrasse near Berlin.*

Name, Nationality and Place of Residence of Person in Charge: *Alfred Friedrich, German, Hermannstrasse near Berlin, 20, Parkstrasse.*

Name, Nationality and Place of Residence of Crew: *None*

Name, Profession, Nationality and Place of Residence of Passengers: *Igo Etrich, Factory owner, Austrian, Hermannstrasse near Trautman, Posen.*

Description of Cargo:

FLIGHT.

Approximate time of departure: *September 12th 1913.*

Place of departure: *Issy les Moulineaux near Paris.*

Intended landing place in United Kingdom: *Hendon Aerodrome near London.*

Proposed destination: *London (Hendon Aerodrome)*

Object of voyage: *Pleasure trip*

No change shall be made in the arrangements above stated unless the written consent of His Britannic Majesty's Consul has first been obtained.

I, *Constantine Graham*, His Britannic Majesty's Consul General at Paris, hereby certify that the above named being the person in charge of the aircraft, did on the *11th* day of *September* 1913 make application to me in the manner prescribed by No. IV of the Orders of 1st March 1913, made by the Secretary of State under the Aerial Navigation Acts, and furnished to me the particulars set forth above; that I have satisfied myself as to the bona fides of the said *Alfred Friedrich* and as to the accuracy of the particulars furnished by him, and that in my opinion he and, after landing at the place specified above, he is permitted to continue his voyage in the United Kingdom, provided he comply with all the requirements of the said Orders of the 1st March 1913.

Signature: *Constantine Graham*

Place: *Paris*

Date: *10.9.1913*

Attest: *Edmond Louis*

FLIGHT SERVICE

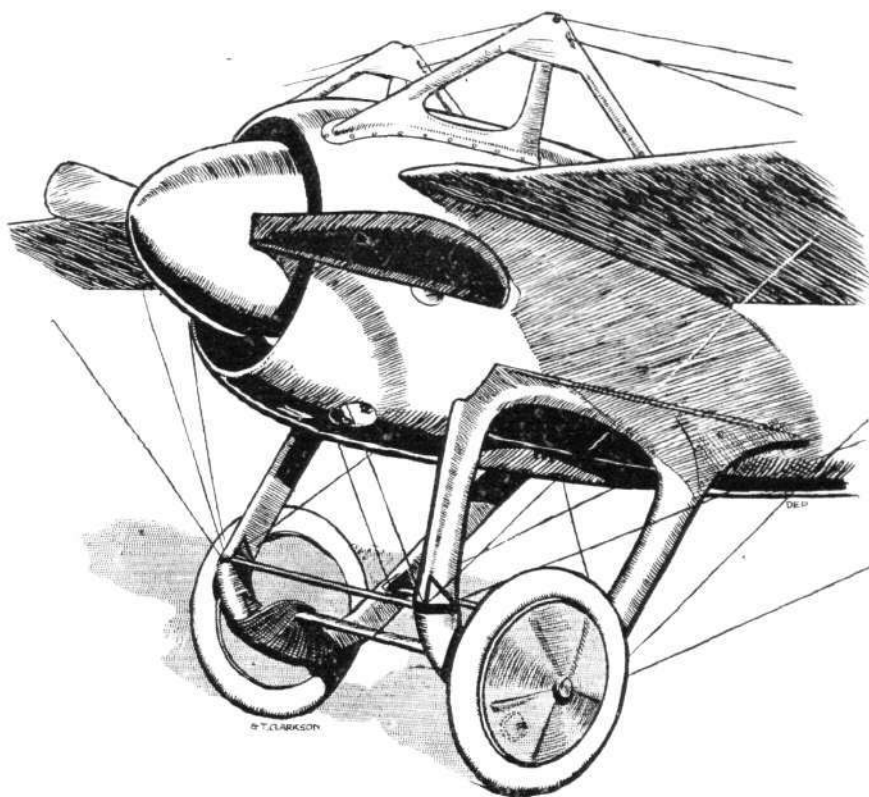
Facsimile of the British permit granted in Paris to Herr Igo Etrich to fly his Etrich-Taube monoplane in England during his recent visit to this country.

THE 160 H.P. DEPERDUSSIN RACING MONOPLANE.

130 M.P.H. sounds incredible, even in these days of speed, and to have dared to prophesy such speeds only a little while back would have been simply to call down ridicule. Yet this is the speed of the Deperdussin monoplane, of which we publish illustrations this week, and which, it will be remembered, won this year's Gordon-Bennett Race at Rheims, piloted by that daring aviator, Prevost.

When considering such speeds the first questions asked

span and partly by having very flat and very thin section wings. The reduction in body resistance has been obtained by paying the minutest attention to the best possible streamline form in connection with a chassis which offers a minimum of resistance. A glance at the accompanying illustrations will show what form this attempt has taken, and the result proves with what success.

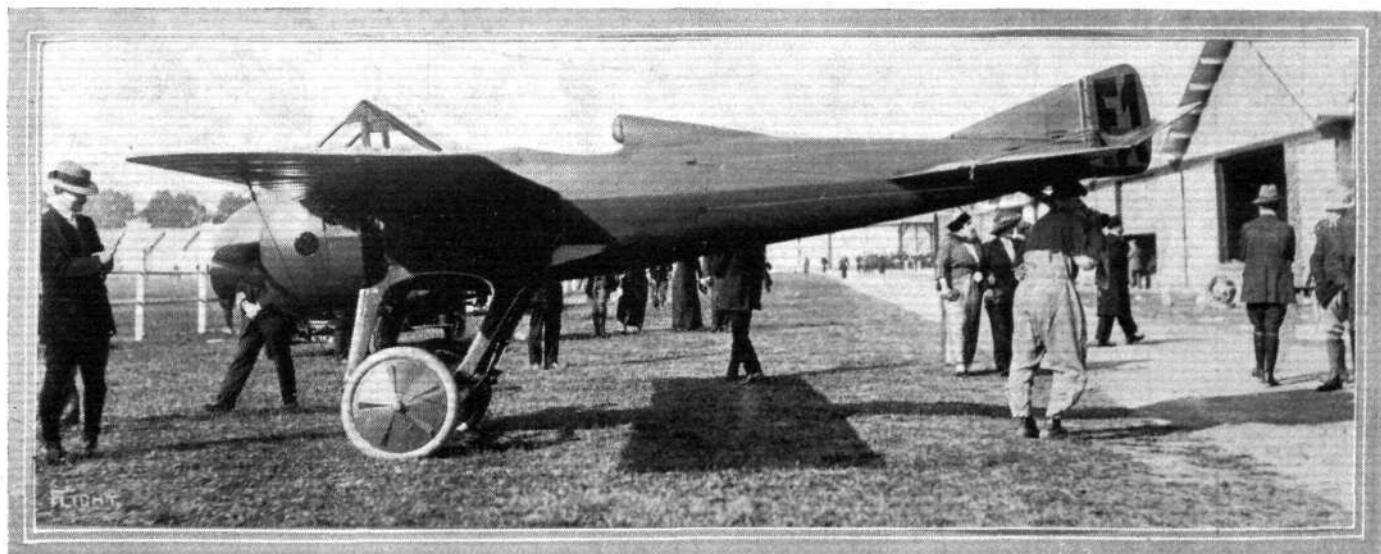


The front portion of the Deperdussin racer.

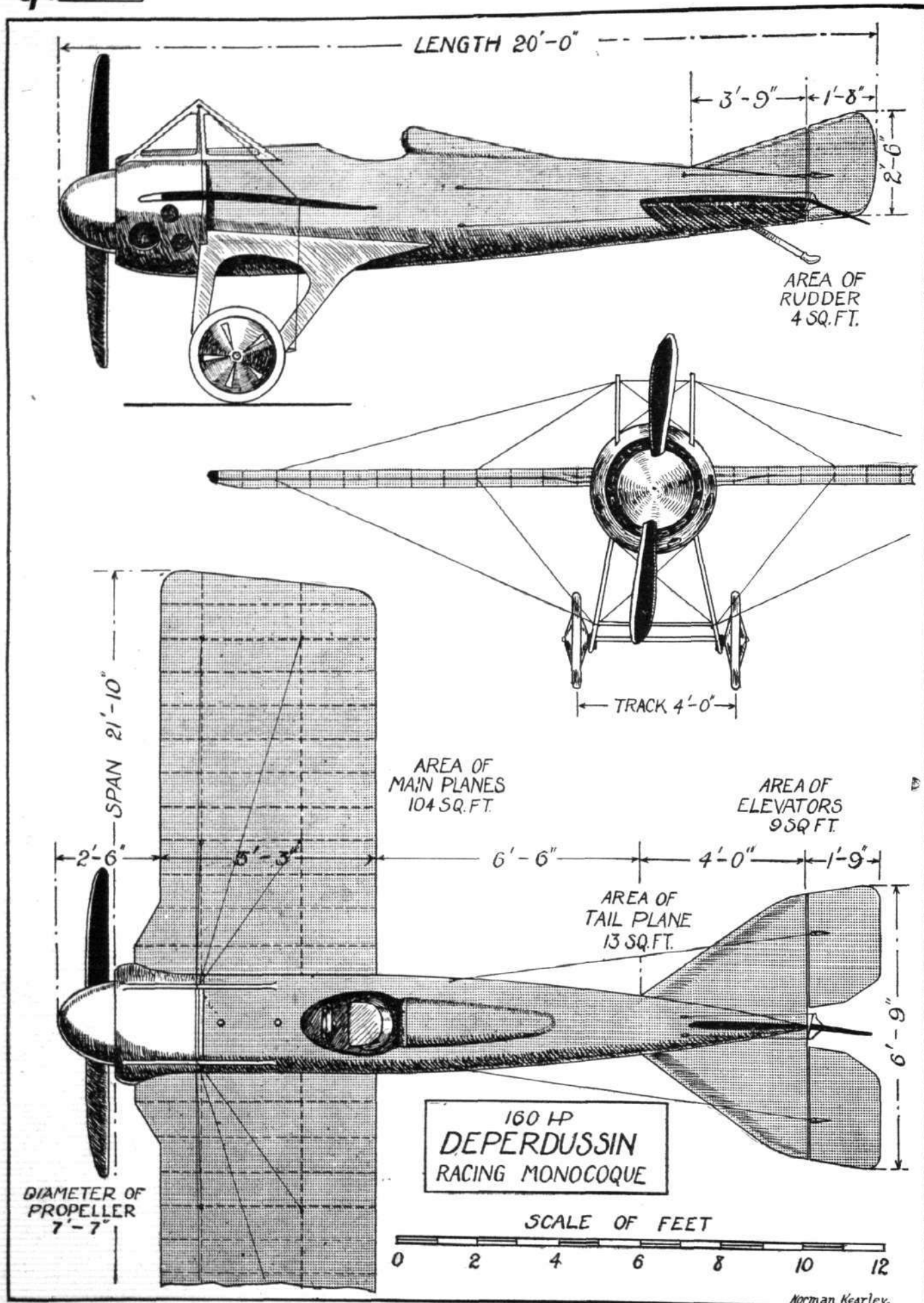
naturally are: How is it done? What makes it possible? In the case of the Dep. the answer must be: Firstly, high engine power, and, secondly, reduction to a minimum of head resistance. The latter may again be divided into two, *i.e.*, wing resistance and body resistance. The first has been reduced partly by having a very short

As for the actual construction of the machine, the body is of the same construction as that which characterises all the modern French Deps., *i.e.*, it is of the *monocoque* type, which was, we believe, originated by the Deperdussin firm. The procedure of building this *coque* is as follows: Three layers of thin stringers of tulip wood are glued together over the detachable form on which the *coque* is built, tulip wood being particularly suitable for this sort of work. When the glue has set, the underlying form is taken down, thus leaving a shell composed of a great number of strips running across one another, and thus affording the maximum of strength. The thickness of this shell is about 4 mm. or roughly $\frac{1}{8}$ of an inch. The *coque* is now covered inside and out with fabric, which is glued on and varnished, and the finished result is a shell combining great strength with comparatively small weight, and possessing a very good streamline form. On this shell are then secured the different members, such as engine bearers, wing compression struts, and the anchorage for the chassis and *empennage*.

The wings, which are very flat and very thin in cross section, are built up of spars of hickory and ash with ribs of pine, and the whole is covered with strong linen cloth doped with Emaillite. The upper and lower bracing wires are secured to the *cabane* and to the front of the chassis respectively, whilst the upper warping wires pass round pulleys in the *cabane*, and the lower ones are taken to a drum on the transverse rocking lever situated on the rear cross-member of the chassis. An inspection of the front view of the machine will show that owing



Prevost's Deperdussin, the winner of the Gordon-Bennett Trophy, competed for this year at Rheims. Prevost's average speed was over 124 miles per hour.



THE 160 h.p. GNOME-DEPERDUSSIN, WINNER OF THE GORDON-BENNETT RACE.—Plan, front and side elevations to scale.

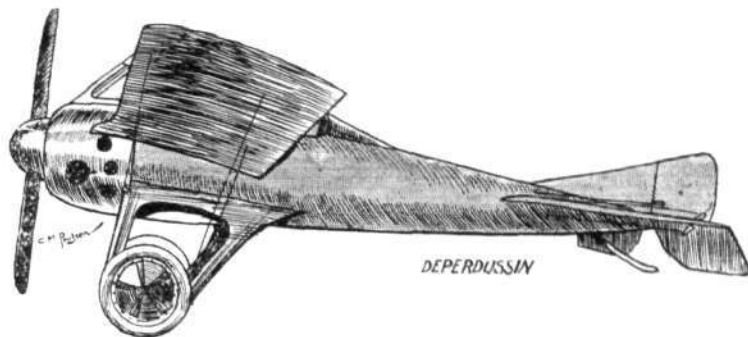
to the short span and the fairly deep chassis, the angle of the bracing cables is particularly good.

At the rear of the *fuselage* are mounted the tail planes, which consist of a fixed damper plane, which is slightly cambered and lightly loaded, to the trailing edge of which is hinged the divided elevator. A small vertical fin is fitted on top of the *fuselage*, and to this is hinged the rudder. The controls are of the standard Dep. type. A bridge-like member resembling an inverted U carries a rotatable hand wheel, the forward and backward movement of which operates the elevator, while rotation of the wheel actuates the warp. A transverse foot bar controls the rudder.

A chassis of the type known to most of our readers from the British-built Deps. supports the machine when on the ground. It consists of two U-shaped members of three-ply wood attached at the top to the *fuselage*, and carrying at their lower extremities the tubular wheel axle which is sprung in the usual way by means of rubber shock-absorbers.

Mounted on steel engine bearers in the nose of the *fuselage* is the 160 h.p. Gnome engine which furnished the power in the Gordon-Bennett Race, but it is worth noticing that the machine will fly with a 50 h.p. Gnome

engine. An aluminium shield encloses the engine on the sides, while cooling is obtained by leaving a sufficiently large open space between the engine cowl and the hemispherical cap which is fitted over the boss of the



Sketch showing the racing Deperdussin from the side.

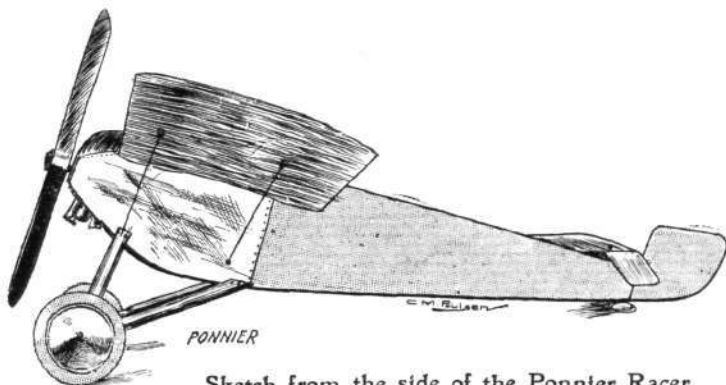
propeller in order to provide a good entry for the air. It will be noticed that even the pilot's head has been "streamlined." The weight of the machine fully loaded is 1,350 lbs. Her speed round a course is 125 m.p.h. and in a straight line she does about 130 m.p.h.

THE PONNIER MONOPLANE.

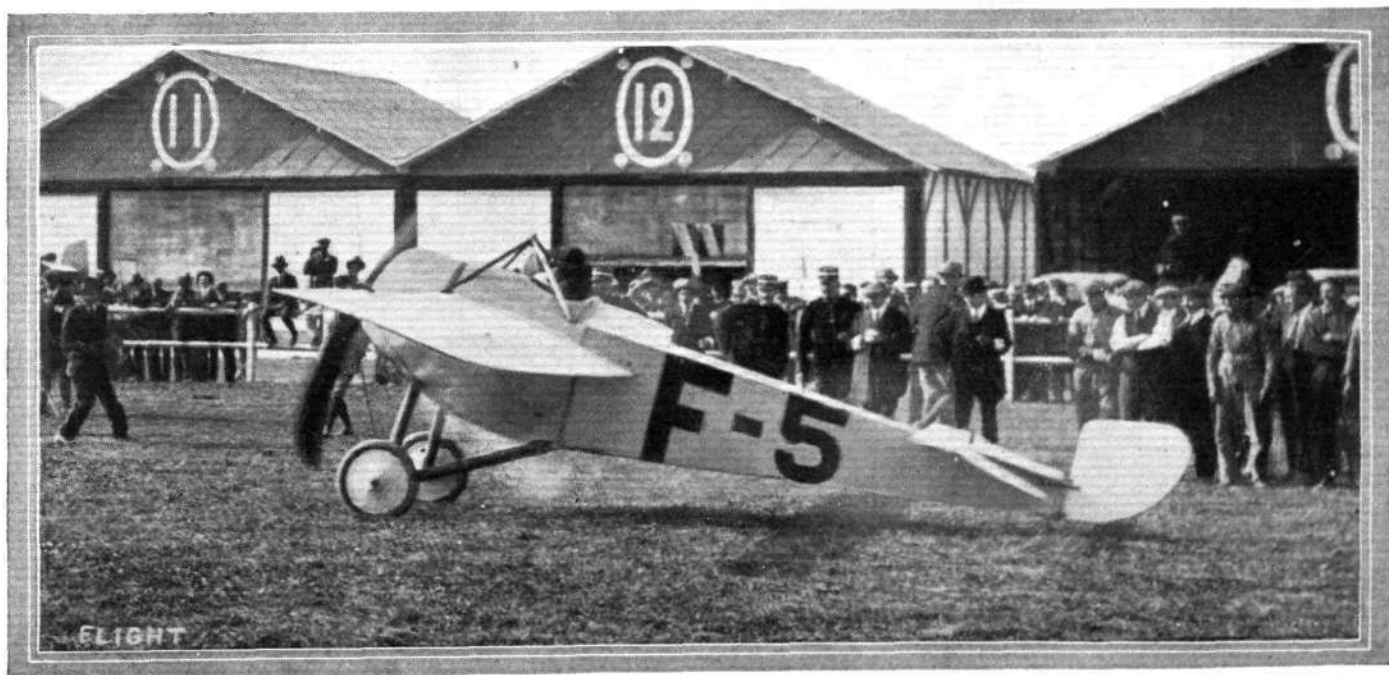
ALTHOUGH the Ponnier monoplane did not succeed in winning the Gordon-Bennett race it is none the less inter-

esting, for it is probably as fast as the winner, and the difference in speed is accounted for by the fact that the pilot, M. E. Vedrines, did not cut his corners so sharply as did M. Prevost. In its general appearance the Ponnier follows the lines of its predecessor, the well-known Hanriot monoplane.

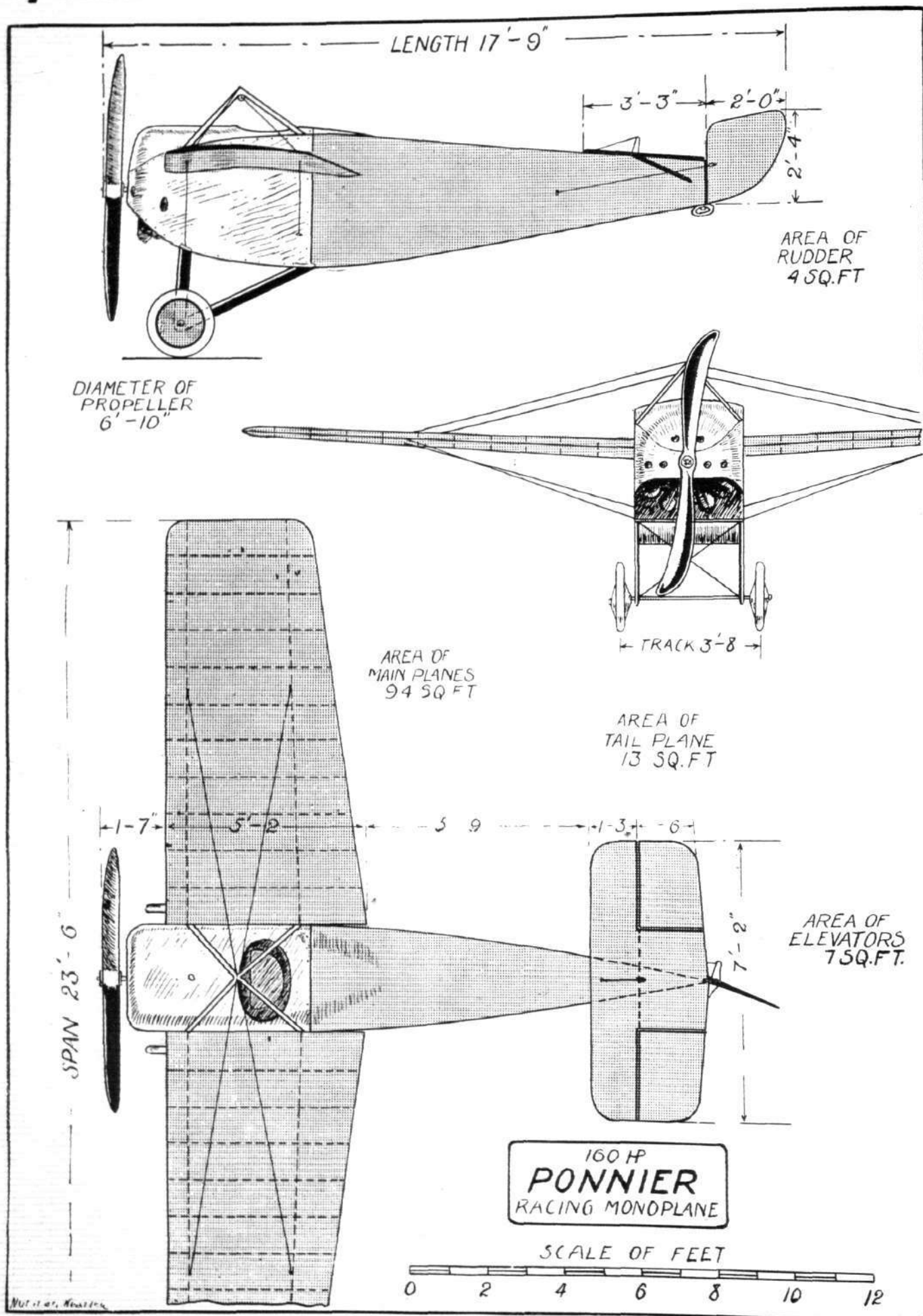
The *fuselage*, which is very deep and wide in the front portion, is of rectangular cross section, and is built up in the usual way of four *longerons* of ash connected by struts and cross members, the whole being made rigid by means of diagonal cross wiring. In the nose of the machine the *longerons* converge abruptly in an upward and downward direction to meet the front engine bearers. An aluminium shield covering in the greater part of the engine, and running back to form a wind screen in front of the pilot, prevents any oil from being blown back into the pilot's



Sketch from the side of the Ponnier Racer.



M. E. Vedrines' 160 h.p. Gnome-Ponnier racing monoplane.
1271



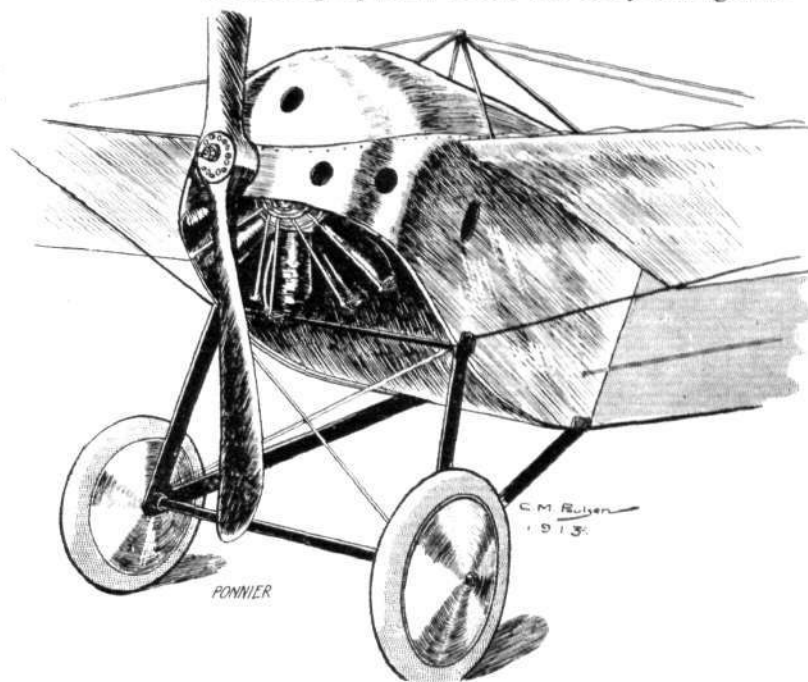
THE PONNIER RACING MONOPLANE.—Plan, front and side elevations to scale.

face. The landing chassis fitted to this machine is evidently meant for racing purposes only, for it has been reduced to the simplest possible form, and does not even provide any springing of the wheels, so that it would not be very suitable for landing on anything but the smoothest of surfaces. For the purpose for which it was designed, however, it was doubtless quite good, and, as our readers may be aware, the chassis usually fitted to these machines is of the wheel and skid type, which combination has proved very satisfactory.

The wings are of the standard Ponnier type with a Philip's entry, and a very pronounced wash out to the trailing edge. The spars are of rectangular section, hollowed out for lightness. The number of lift wires has been reduced to a minimum, there being only two wires—one top and one bottom—to each spar. The lower wires are not carried to the lower extremities of the chassis, which is the usual procedure, but have been secured to the lower *longeron* of the *fuselage*, the reason probably being, that should the chassis be damaged on landing the *fuselage* will have a chance to escape serious injury, while the lift wires will remain intact. The resultant angle of the lift wires does not appear any too good, but presumably the designers of the machine have such confidence in the strength of the internal wing construction that one lift wire to the under side of each spar has been deemed sufficient.

The power plant of this machine is the same as that of the Dep., *i.e.*, a 160 h.p. Gnome engine driving directly an Integral propeller of 6 ft. 10 ins. diameter. Wholly on

top of the rear portion of the *fuselage* is mounted a fixed tail plane which is of the flat, non-lifting type, to the trailing edge of which are hinged the elevators. A rudder projecting upwards above the body is hinged to



The front portion of the Ponnier racing monoplane.

the stern post of the *fuselage*. A tail skid of the simplest form, consisting of an elliptical leaf spring, protects the tail planes against contact with the ground.

Mr. Carr Wins British Michelin Cup No. 1.

THE competition for the British Michelin Cup No. 1 closed on Friday of last week without anyone having beaten the record of Mr. R. H. Carr, on the Grahame-White 'bus, of 315 miles, and Mr. Carr, therefore, subject to official verification of his flight, wins the Trophy and £500 for this year.

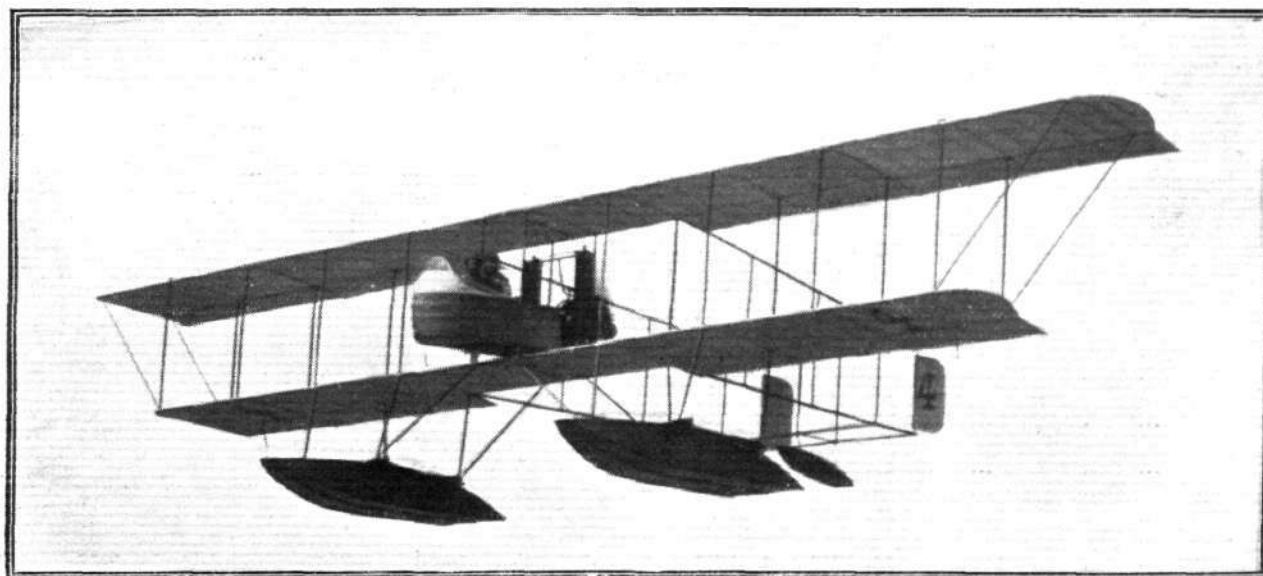
Two Attempts for the British Michelin Cup No. 2.

ALTHOUGH they were both unsuccessful two very fine flights in the competition for the British Empire Michelin Cup No. 2 were made in bad weather on Tuesday. Mr. Carr on the Grahame-White biplane, with a passenger, set out from Hendon and flew by way of Brooklands and Salisbury Plain to Shoreham, where he was forced to land on account of the gale, after covering about 140 miles in 5 hrs. 10 mins. The second attempt was made by Mr. Hawker

on the Sopwith biplane. He set out from Brooklands, and had very nearly completed the circuit when he had to land at Hendon owing to the breaking of the pressure pipe to the petrol tank. He had covered a distance of about 265 miles in five hours. The competition closes on the last day of this month.

The Military Centre at Montrose.

THE negotiations between the War Office and the Montrose Town Council have now been completed, and the former have leased a large area of the Montrose Golf Links for an aerodrome, to which No. 2 Squadron of the R.F.C., now stationed at Upper Dysart, will be transferred almost immediately. The new flying ground is much larger than the old one, and it is also nearer the Panmure Barracks, where the officers and men of the R.F.C. have their quarters.



A Maurice Farman Navyplane in the air.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

WORLD'S RECORDS TO SEPTEMBER 30th, 1913,
PASSED BY FÉDÉRATION AÉRONAUTIQUE
INTERNATIONALE.
AVIATION.

SPEED. Closed Circuit without Alighting.

Dis- tance.	Aviator.	Country Hold- ing Record.	Date of Record.	Time.
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Aviator only.

kiloms.	Aviator.	Country	Date	Time.
5	J. Vedrines	United States	Sept. 9, 1912	0 1 43 ³ / ₄
10	M. Prevost	France	" 29, 1913	0 2 56 ³ / ₄
20	M. Prevost	"	" 29, 1913	0 5 54 ¹ / ₂
30	M. Prevost	"	" 29, 1913	0 8 52 ¹ / ₂
40	M. Prevost	"	" 29, 1913	0 11 50 ¹ / ₂
50	M. Prevost	"	" 29, 1913	0 14 48 ¹ / ₂
100	M. Prevost	"	" 29, 1913	0 29 40
150	M. Prevost	"	" 29, 1913	0 44 38
200	M. Prevost	"	" 29, 1913	0 59 45 ³ / ₄
250	J. Vedrines	"	Jan. 9, 1913	2 1 53 ³ / ₄
300	Cobioni	Italy	Mar. 28, 1912	2 49 0
350	Gilbert	France	Dec. 30, 1912	3 26 16
400	Gilbert	"	" 30, 1912	3 55 27 ³ / ₄
450	Gilbert	"	" 30, 1912	4 24 44 ¹ / ₂
500	Gilbert	"	" 30, 1912	4 54 6 ¹ / ₂
600	Gilbert	"	" 30, 1912	5 52 38
700	Fourny	"	Sept. 11, 1912	9 31 1
800	Fourny	"	" 11, 1912	10 44 45 ³ / ₄
900	Fourny	"	" 11, 1912	11 59 9 ³ / ₄
1,000	Fourny	"	" 11, 1912	13 1 12

Aviator and One Passenger.

kiloms.	Aviator.	Country	Date	Time.
5	H. Bier	Austria	Oct. 1, 1912	0 2 58
10	G. Legagneux	France	July 20, 1912	0 4 24 ¹ / ₂
20	G. Legagneux	"	" 20, 1912	0 8 51
30	G. Legagneux	"	" 20, 1912	0 13 18 ³ / ₄
40	G. Legagneux	"	" 20, 1912	0 17 44 ¹ / ₂
50	G. Legagneux	"	" 20, 1912	0 23 13
200	H. Bier	Austria	Oct. 1, 1912	2 3 49
250	E. Guillaux	France	Feb. 11, 1913	2 34 48 ³ / ₄
300	E. Guillaux	"	" 11, 1913	3 4 50
350	E. Guillaux	"	" 11, 1913	3 34 46 ¹ / ₂
400	E. Guillaux	"	" 11, 1913	4 4 42 ³ / ₄

Aviator and Two Passengers.

kiloms.	Aviator.	Country	Date	Time.
5	Ch. Nieuport	Austria	June 30, 1912	0 2 52
10	Ch. Nieuport	"	" 30, 1912	0 5 45
20	Ed. Nieuport	France	Mar. 9, 1911	0 11 59 ³ / ₄
30	Ed. Nieuport	"	" 9, 1911	0 17 52 ³ / ₄
40	Ed. Nieuport	"	" 9, 1911	0 22 44 ³ / ₄
50	Ed. Nieuport	"	" 9, 1911	0 29 37 ³ / ₄
100	Ed. Nieuport	"	" 9, 1911	0 59 8

Aviator and Three Passengers.

kiloms.	Aviator.	Country	Date	Time.
5	P. Mendelli	Austria	April 16, 1912	0 3 48
10	G. Busson	France	Mar. 10, 1911	0 6 16 ³ / ₄
20	P. Mendelli	Austria	Aug. 16, 1912	0 12 3
30	P. Mendelli	"	" 16, 1912	0 17 37
40	P. Mendelli	"	" 16, 1912	0 23 11
50	P. Mendelli	"	" 16, 1912	0 29 47
100	P. Mendelli	"	" 16, 1912	0 56 53

Aviator and Four Passengers.

kiloms.	Aviator.	Country	Date	Time.
5	G. Busson	France	Mar. 10, 1911	0 3 34
10	G. Busson	"	" 10, 1911	0 7 8
20	G. Busson	"	" 10, 1911	0 14 0 ³ / ₄
30	Champel	"	April 15, 1913	0 21 53 ³ / ₄
40	Champel	"	" 15, 1913	0 29 13 ³ / ₄
50	Champel	"	" 15, 1913	0 30 31
100	Champel	"	" 15, 1913	1 13 1 ¹ / ₂
150	Champel	"	" 15, 1913	1 49 11 ³ / ₄
200	Champel	"	" 15, 1913	2 25 2 ³ / ₄
250	Champel	"	" 15, 1913	3 1 17

GREATEST SPEED. Closed Circuit without Alighting.

Aviator.	Country Holding Record.	Date of Record.	Speed per Hour in a Flight of 5 Kiloms.
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Aviator Only.

M. Prevost ... France ... Sept. 29, 1913 | 203·850 kiloms.

Aviator and One Passenger.

G. Legagneux ... France ... July 20, 1912 | 135·952 kiloms.

Aviator and Two Passengers.

E. Nieuport ... France ... July 20, 1912 | 102·855 kiloms.

Aviator and Three Passengers.

P. Mendelli ... Austria ... Aug. 16, 1912 | 106·29 kiloms.

Aviator and Four Passengers.

G. Busson ... France ... Mar. 10, 1911 | 87·251 kiloms.

DISTANCE. Closed Circuit without Alighting.

Aviator.	Country Holding Record.	Date of Record.	Distance Covered.
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Aviator only.

Fourny ... France ... Sept. 11, 1912 | 1,010·900 kils.

Aviator and One Passenger.

E. Guillaux ... France ... Feb. 11, 1913 | 410 kiloms.

Aviator and Two Passengers.

H. Bier ... Austria ... Oct. 1, 1912 | 112 kiloms.

Aviator and Three Passengers.

Mendelli ... Austria ... Aug. 16, 1912 | 110 kiloms.

Aviator and Four Passengers.

Champel ... France ... April 15, 1913 | 250 kiloms.

DISTANCE. In a Straight Line without Alighting.

Aviator and One Passenger.

Capt. C. A. H. Longcroft ... Great Britain | Aug. 19, 1913 | 461·776 kiloms.

TIME. Closed Circuit without Alighting.

Time.	Aviator.	Country Holding Record.	Date of Record.	Distance.
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Aviator only.

hours.	Aviator.	Country	Date	kiloms.
$\frac{1}{4}$	M. Prevost	France	Sept. 29, 1913	50
$\frac{1}{2}$	M. Prevost	"	" 29, 1913	100
1	M. Prevost	"	" 29, 1913	200
2	J. Vedrines	"	Jan. 9, 1913	246·937
3	M. Tabuteau	"	" 24, 1912	310·281
4	Gilbert	"	Dec. 30, 1912	401·900
5	Gilbert	"	" 30, 1912	510
6	Bournique	"	" 31, 1910	490
7	M. Tabuteau	"	" 30, 1910	522·935
8	Fourny	"	Sept. 11, 1912	585·200
9	Fourny	"	" 11, 1912	661·200
10	Fourny	"	" 11, 1912	744·800
11	Fourny	"	" 11, 1912	820·800
12	Fourny	"	" 11, 1912	904·400
13	Fourny	"	" 11, 1912	980·400

Aviator and One Passenger.

hours.	Aviator.	Country	Date	kiloms.
$\frac{1}{4}$	G. Legagneux	France	July 5, 1912	31·020
$\frac{1}{2}$	G. Legagneux	"	" 5, 1912	66·639
1	G. Legagneux	"	" 5, 1912	133·469
2	E. Guillaux	"	Feb. 11, 1913	191·900
3	E. Guillaux	"	" 11, 1913	291·900
4	E. Guillaux	"	" 11, 1913	391·900

Aviator and Three Passengers.

hour.	Aviator.	Country	Date	kiloms.
1	P. Mendelli	Austria	Aug. 16, 1912	106·029

Time.	Aviator.	Country Hold- ing Record.	Date of Record.	Distance.
<i>Aviator and Four Passengers.</i>				
hours.				kiloms.
$\frac{1}{4}$	Champel ...	France ...	April 15, 1913	20
$\frac{1}{2}$	Champel ...	" ...	" 15, 1913	40
1	Champel ...	" ...	" 15, 1913	82.343
2	Champel ...	" ...	" 15, 1913	165
3	Champel ...	" ...	" 15, 1913	247.323

DURATION. Closed Circuit without Alighting.

Aviator.	Country Hold- ing Record.	Date of Record.	Time.
<i>Aviator Only.</i>			
Fourny ...	France ...	Sept. 11, 1912	13 h. 17 m. 57 $\frac{1}{2}$ s.
<i>Aviator and One Passenger.</i>			
Gaubert ...	France ...	Aug. 30, 1913	6 h. 42 m. 49 $\frac{3}{8}$ s.
<i>Aviator and Two Passengers.</i>			
Faller ...	Germany ...	Feb. 13, 1913	3 h. 16 m.
<i>Aviator and Three Passengers.</i>			
Gaell ...	Germany ...	Sept. 2, 1913	3 h. 11 m. 14 s.
<i>Aviator and Four Passengers.</i>			
Champel ...	France ...	April 15, 1913	3 h. 1 m. 17 s.
<i>Aviator and Five Passengers.</i>			
Faller ...	Germany ...	Jan. 9, 1913	1 h. 10 m. 17 s.
<i>Aviator and Six Passengers.</i>			
Faller ...	Germany ...	Jan. 5, 1913	1 h.
<i>Aviator and Seven Passengers.</i>			
L. Noel ...	Great Britain...	Sept 22, 1913	17 m. 25 $\frac{2}{5}$ s.

ROYAL FLYING CORPS (MILITARY WING).

WAR OFFICE summary of work for week ending November 14th :—
No. 1 Squadron. Farnborough.—The "Delta" was out on the 11th inst., making three short reconnaissance flights. On the 13th and 14th the squadron was engaged in inflating and rigging the "Gamma."

No. 2 Squadron. Montrose.—Very little flying was carried out owing to bad weather. Towards the end of the week a number of instructional flights were made, otherwise the time was generally devoted to technical instruction.

No. 3 Squadron. Netheravon.—Several cross-country flights were carried out by officers of this squadron on the East Coast, but the weather conditions were generally unsuitable. Various lectures were given.

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ALTITUDE.

Aviator.	Country Hold- ing Record.	Date of Record.	Altitude.
<i>Aviator Only.</i>			
Ed. Perreyon ...	France ...	Mar. 13, 1913	5,880 metres.
<i>Aviator and One Passenger.</i>			
Ed. Perreyon ...	France ...	June 3, 1913	4,960 metres.
<i>Aviator and Two Passengers.</i>			
Oblt. von Blaschke ...	Austria ...	June 29, 1913	3,580 metres.
<i>Aviator and Three Passengers.</i>			
Sablatnig ...	Germany ...	Sept. 30, 1913	2,830 metres.
<i>Aviator and Four Passengers.</i>			
Marty ...	France ...	April 15, 1913	1,400 metres.
<i>Aviator and Five Passengers.</i>			
Frantz ...	France ...	Feb. 28, 1913	600 metres.
<i>Aviator and Six Passengers.</i>			
Frangois ...	France ...	April 7, 1913	850 metres.

British Empire Michelin Competition No. 2, £800.

This Competition closes on November 30th, 1913. On Wednesday, the 19th inst., two competitors made a start. At 8.20 a.m., Carr on the Grahame-White Biplane, 100 h.p. Green, left the London Aerodrome, Hendon, for Salisbury, Shoreham, Eastchurch, Brooklands, and back to Hendon. At 9.45 a.m., Hawker on the Sopwith Biplane, 100 h.p. Green, left Brooklands to complete the same course, in the opposite direction. At the time of going to press, the result of these attempts is not known.

166, Piccadilly, W. HAROLD E. PERRIN, Secretary.

No. 4 Squadron. Netheravon.—Very little flying took place during the week owing to the inclement state of the weather, but the time was devoted to technical lectures.

No. 5 Squadron. Farnborough.—A number of flights were made during the week. This squadron is at present under musketry instruction and firing the revolver course.

Flying Depot Squadron. Farnborough.—Experimental work in aircraft along various lines was continued by this squadron.

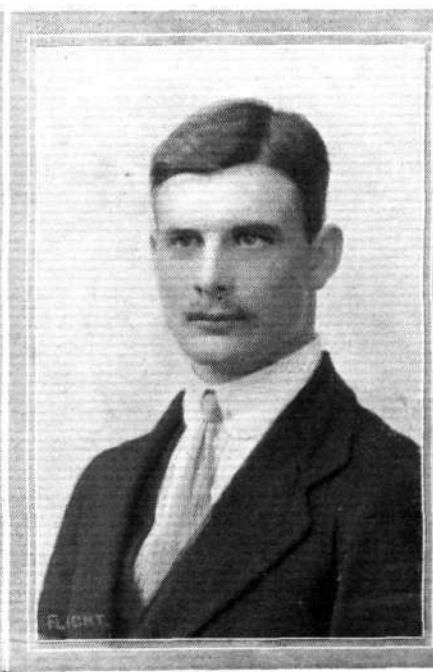
THE ROYAL FLYING CORPS.

The following appointment was announced in the *London Gazette* of the 14th inst. :—

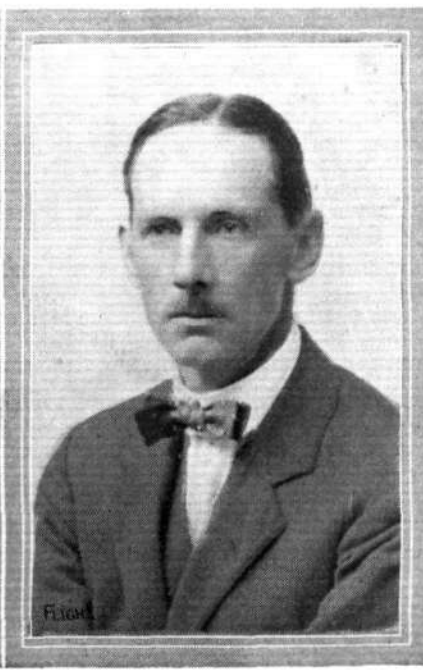
R.F.C.—Military Wing.—*Special Reserve of Officers.*—Robert Reginald Skene to be second lieutenant (on probation). Dated November 15th, 1913.



Capt. T. H. C. Frankland.



2nd Lt. G. J. Malcolm, R.A.



Major G. Kinsman, R.F.A.

Three more pilots who have secured their Royal Aero Club certificates at the Vickers Flying School, Brooklands.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Easchurch Flying Grounds.

THE weather conditions again during the past week prevented any great amount of flying, but despite this some good exhibitions of wind fighting were witnessed, but on Wednesday and Thursday the wind and rain were terrible, and these were blank days.

Monday was dull and windy, but a good number of flights were accomplished, and if we were to pick out from that day any flight that was particularly meritorious, the extended flight of Sub-Lieut. Pierce, R.N., on a Short biplane, would command attention as a good example of airmanship. Tuesday was very wet and gusty early. Later several flights were made, including Com. Samson's first flight since recovering from his recent illness, his "get off" being of his usual style. The Army Henry Farman 294 arrived, accompanied by a passenger.

Friday, the feature of the day was the truly magnificent flight of Sub-Lieut. Marix, R.N., on a Short 62. At times he appeared to be poised motionless against the wind, and he descended by a series



Capt. C. G. Billing, who has recently passed his *brevet* tests on a 35 h.p. Caudron biplane at the W. H. Ewen School, Hendon.

of spirals. On Saturday, Navy machines, the Army Henry Farman and Professor A. K. Huntington were all out. As a summary, the following pilots have been doing air work during the week: Commander Samson, Lieuts. Briggs, Finch Noyes, Sub-Lieuts. Pierce, Rainey, Littleton, Marix, and Capt. Lushington.

The machines in use include Avro 41, Caudron 45, Short 63, 65, and 3, Maurice Farman 70, Blériot 39, Deperdussin 36, and the Army machines.

Brooklands Aerodrome.

ON Friday last week Mr. Hawker, on the Sopwith tractor biplane, made a final attempt to win the Michelin Competition, but the weather conditions were so rough that he was unable to finish his effort, and the prize therefore goes to Mr. Carr, who covered 315 miles in the previous week.

On Saturday, Mr. Raynham, with Mr. J. Alcock as a passenger, flew to Farnborough and back, afterwards flying over to Hendon, with Mr. Dukinfield Jones as a passenger, to compete in the Motor Show race, in which, although unable to score in the handicap, he accomplished a wonderful performance by flying a lap in the fastest time ever flown before at Hendon. Mr. Raynham has now got his Avro biplane tuned up to concert pitch, with a consequent increase in speed, the machine's climbing capabilities being also most noticeable. Mr. Barnwell was flying well on the Blériot monoplane, and Mr. Merriam was busy in a bumpy wind with pupils.

On Sunday, the Martinsyde monoplane was first out, and was flying extremely well in a strong wind, several passengers being carried at different times. Mr. Dukinfield Jones was next out, and made some flights on the Flanders biplane. Then Mr. Raynham appeared in the clouds again from Hendon, and after landing made several fine exhibition flights, in addition to taking up passengers.

Mr. Merriam took up a passenger, and afterwards several pupils, one of whom, Lieut. H. F. Treeby, of the 1st West Riding



Capt. H. C. Jennings, who has just obtained his certificate on a 35 h.p. Caudron biplane at the W. H. Ewen School Hendon.

Regiment, then passed his *brevet* tests in excellent style, climbing steadily to an altitude of 1,200 ft., and making a fine spiral *vol plané* descent, with a landing close to the observer. Mr. Hawker was busy on the Sopwith machines, taking up a number of passengers, amongst them being the winner of the ballot for the free passenger flight, Mr. J. D. Campbell, of Newark House, Ripley.

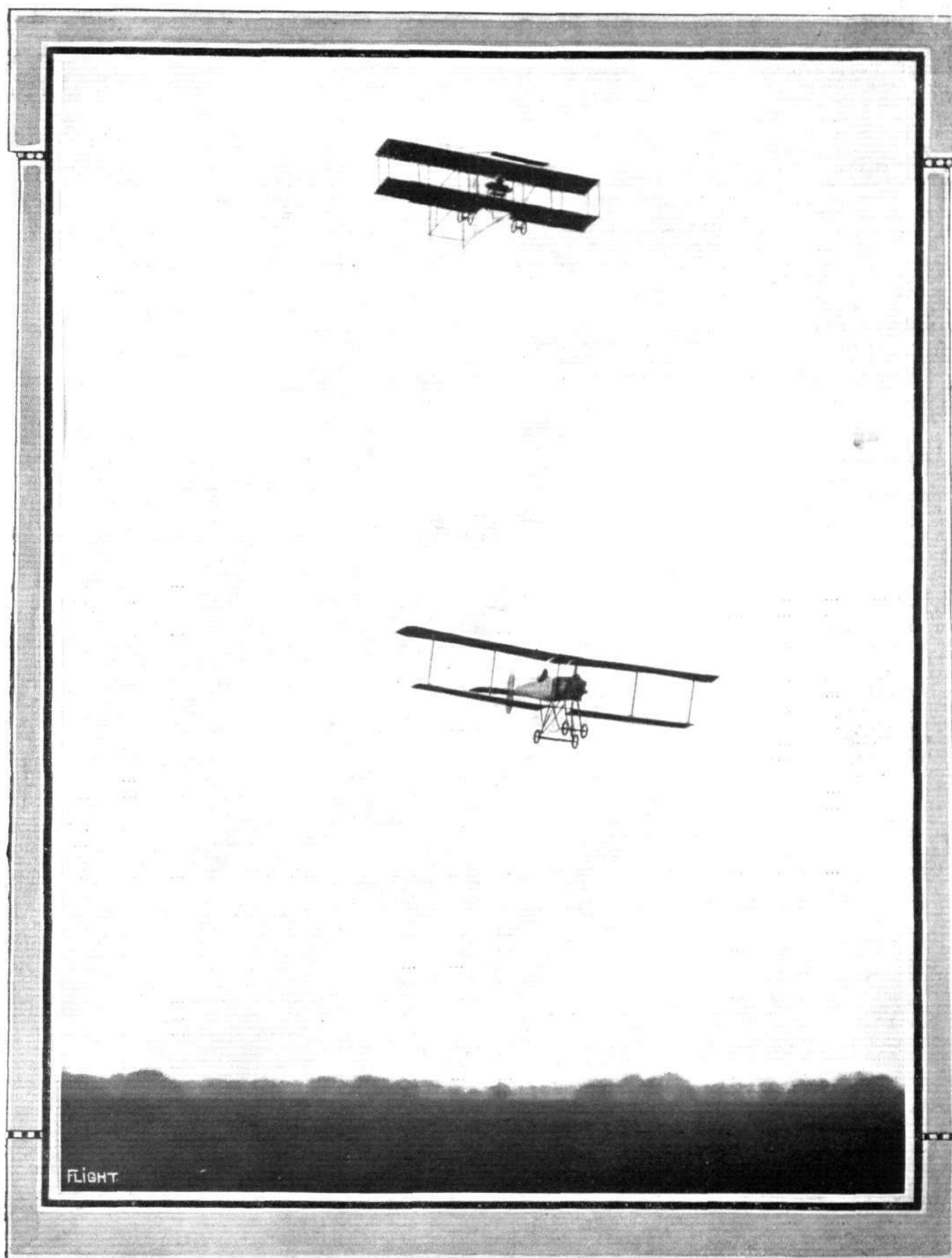


Mr. J. E. B. Thornely, who has recently, on an E.A.C. biplane at the Eastbourne Aerodrome, gone through all the tests required for a pilot's certificate. Mr. Thornely is still under the pilot's "age limit," he being just four months over seventeen when he carried out the tests.

Avro School.—Monday, last week, Raynham testing the 80 h.p. Gnome Avro for half-an-hour solo, demonstrating the machine's enormous range of speed and fine gliding angle. In the afternoon he climbed to 4,500 ft. in 8½ mins. with a passenger, and descended in a long flat glide lasting the same time.

Raynham up for 15 mins., Wednesday, in 30 m.p.h. wind in the afternoon, to test new air speed indicator.

Friday afternoon Raynham up to 5,000 ft. in strong wind, getting



"Flight" Copyright.

Mr. Norman Spratt on the Breguet (below) and Mr. Marcus D. Manton on the Grahame-White biplane, flying for the Shell Trophy at Hendon on Saturday last.

well above the clouds. Later for a few very fast circuits of the track by moonlight, during which a speed of 80 m.p.h. was reached.

Raynham on Saturday morning flew to Farnborough with a passenger in a high wind. After a short stay the return journey was made, the time taken being 7 mins. After lunch Raynham left for Hendon with Dukinfield Jones as passenger.

Vickers School.—Monday, last week, Knight and Paterson on biplane 20 with Capt. Lee. Mr. Hinshelwood solo. Mr. Newton Clare on No. 3 mono. In afternoon Barnwell on biplane 20 with passenger. Mr. Hinshelwood and Capt. Pelham solos. Barnwell and Paterson on No. 5 mono.

Knight on biplane 20, Paterson on biplane 26, Tuesday. Messrs. Barton and Pelham solos. Capt. Pelham for *brevet* on biplane 26, getting through in very good style.

Saturday. In morning, Knight on biplane 20 with Capt. Lee. Mr. Hinshelwood solo. Paterson on No. 5 mono. with Lieut. Oxlade (new pupil), and Mr. Morgan. Mr. Morgan solo straights. Barnwell testing Blériot mono.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Messrs. Howarth, Webb and Green straights with Instructor Manton in passenger seat Monday last week. Mr. Lillywhite solo straights, Mr. Francis straights with Instructor Strange in passenger seat. Mr. C. Draper circuits and solo figures of eight, &c., Mr. Ivan Hart-Davies circuits.

Tuesday, Mr. Edridge-Green, Mr. Howarth and Mr. Segebaden straights with Instructor Strange in passenger seat. Mr. Russel circuits with Instructor Noel, Mr. Cripps circuits, Mr. Lillywhite solo straights. Mr. Bjorkland (new pupil) rolling with instructor, and afterwards alone.

Saturday, Mr. E. F. Norris, Messrs. C. F. Webb, P. S. Kershaw straights with Instructor Strange; Mr. Von Segebaden solo straights. Lord Edward Grosvenor rolling on Blériot No. 2.

W. H. Ewen School.—Rain and wind have prevented much school work from being done last week.

On Monday afternoon the pupils were out under the instruction of M. Baumann and Mr. F. W. Goodden. On the *brevet* machine, M. Baumann was instructing Messrs. MacGregor and Scott, who were doing half-circuits and circuits, and Mr. Johnson, who was doing straights. On the 35 h.p. Caudron No. 2, Mr. F. W. Goodden was instructing Messrs. Cooper, Bankes-Price, Wiggett, Murray and Lieut. Kinnear, who were doing straights and rolling.

Salisbury Plain.

Bristol School.—No flying possible on Monday last week.

On Tuesday Voigt made a trial of each biplane, and then gave tuition to Capt. Walcot. Lieut. Marsh did a good solo, then rain commenced and prevented flying.

No flying was possible on Wednesday, Thursday, Friday, or Saturday.



OUR FULL PAGE PORTRAITS.

IN response to many requests, we publish below a list in alphabetical order for each year, with the dates of appearance, of the full-page portraits which have appeared in *FLIGHT* of Pioneers, Pilot-Constructors, Pilots, &c.

Nearly all these copies are still obtainable from the Publishers, 44, St. Martin's Lane, London, W.C., at 6½d. each, post free, for those published during 1909, 1910, 1911 and 1912. For the current year (1913) the charge is 3½d., post free. These portraits form a unique collection of prominent men in the World of Flight.

FLIGHT PIONEERS.

Name.	Date Published.	Name.	Date Published.	Name.	Date Published.
	1909.				
CODY, S. F. ...	Sept. 18	LORAIN, Robert ...	Sept. 17	HAMEL, Gustav ...	April 1
MCCLEAN, Frank ...	Dec. 18	MCCARDLE, W. E. ...	Nov. 26	HEWLETT, Mrs. Maurice ...	Aug. 26
MOORE BRABAZON, J. T. C. ...	Nov. 6	MAXIM, Sir Hiram S. ...	Mar. 12	MOORHOUSE, W. B. R. ...	Oct. 14
ROLLS, Hon. C. S. ...	Nov. 13	MOISANT, John B. ...	Aug. 27	MORISON, O. C. ...	Jan. 21
	1910.	OGILVIE, Alec ...	Sept. 10	PIXTON, C. H. ...	May 6
BARNES, G. A. ...	Sept. 24	PAULHAN, Louis ...	Jan. 22	PORTE, Lieut. J. C., R.N. ...	Dec. 9
BOYLE, Hon. Alan ...	July 23	RADLEY, James ...	Aug. 20	PRIER, Pierre... ..	April 22
CLEMENT, A....	Oct. 22	ROE, A. V. ...	Jan. 29	SAMSON, Lieut. C. R., R.N. ...	Oct. 7
COLMORE, G. C. ...	Dec. 10	SINGER, Mortimer ...	Jan. 15	SANTONI, D. Lawrence ...	Dec. 9
DICKSON, Capt. Bertram ...	July 16	SOPWITH, T. O. M... ..	Dec. 3	STOCKS, Mrs. C. de Beauvoir ...	Nov. 18
DREXEL, J. Armstrong ...	July 30		1911.	VALENTINE, James ...	June 24
DUNNE, J. W. ...	Sept. 3	ASTLEY, H. J. D. ...	Mar. 25	WATKINS, Lieut. H. E. ...	Feb. 4
FARMAN, Henry ...	Feb. 12	BARRINGTON-KENNETT, Lt. B. H. ...	Sept. 16	WEYMANN, C. T. ...	July 8
GIBBS, Lancelot D. ...	Aug. 13	BLONDEAU, G. ...	Sept. 23	WOOD, Capt. H. F. ...	Feb. 18
GILMOUR, D. Graham ...	Oct. 29	CONNEAU, Lieut. ("Beaumont") ...	July 15		1912.
GRACE, Cecil... ..	July 9	CONNER, Lieut. D. G. ...	Mar. 4	HERVEU, Mdme. Jane ...	Jan. 6
GRAHAME-WHITE, C. ...	April 30	DUROCQ, Maurice ...	April 29	HEWITT, Vivian ...	May 4
LADOUGNE, Emile ...	Oct. 15	FULTON, Capt. J. D. B., R.F.A. ...	Dec. 23	LONGMORE, Lieut. A. M., R.N. ...	April 20
		GRESWELL, C. H. ...	Feb. 25	SALMET, Henri ...	Mar. 16

MEN OF MOMENT IN THE WORLD OF FLIGHT.

	1911.				
NORTHCLIFFE, Lord ...	Aug. 5	DUNNE, J. W. ...	Feb. 15	MERRIAM, F. Warren ...	July 19
	1912.	DYOTT, G. M. ...	June 14	PAGE, F. Handley ...	Mar. 1
ARBUTHNOT, Maj.-Gen. H. T., C.B. ...	Nov. 23	ENGLAND, E. C. Gordon ...	April 19	PATERSON, Compton C. ...	Aug. 23
GLAZEBROOK, Dr. R. T., C.B. ...	Nov. 16	EWEN, W. H. ...	May 10	PÉGOU, E. ...	Oct. 4
HENDERSON, Brig.-Gen. D. C. B....	Nov. 9	FLANDERS, L. Howard ...	Mar. 29	PERRIN, Harold E. ...	Jan. 11
HOLDEN, Col. H. C. L., C.B. ...	Nov. 2	FOWLER, F. B. ...	Oct. 11	PICKLES, Sydney ...	Aug. 2
NORTHCLIFFE, Lord ...	Nov. 30	GATES, Richard T. ...	Sept. 20	PIXTON, C. Howard... ..	July 5
O'GORMAN, Mervyn, C.B. ...	Dec. 28	GRAHAME-WHITE, Claude ...	Jan. 18	PIZEY, Collins P. ...	July 26
PAINE, Capt. G. M., M.V.O., R.N. ...	Dec. 14	GREEN, G. ...	Sept. 13	PORTE, Lieut. J. C. ...	May 3
ROSE, the late Sir Charles D. ...	Oct. 19	HAMEL, Gustav ...	June 21	RADLEY, J. ...	April 12
RUCK, Maj.-Gen. R. M., C.B., R.E. ...	Oct. 26	HAVILLAND, G. de ...	Feb. 22	RAYNHAM, F. P. ...	Sept. 27
SYKES, Maj. F. H. ...	Dec. 21	HAWKER, H. G. ...	July 12	ROE, A. V. ...	Jan. 25
WHITE, Sir George, Bart., LL.D....	Dec. 7	HEWLETT, Mrs. Hilda B. ...	June 7	SANTONI, D. Lawrence ...	April 26
	1913.	HUCKS, B. C. ...	June 28	SIPPE, Sidney V. ...	Aug. 30
BLACKBURN, R. ...	May 17	KOOLHOVEN, S. F. W. ...	May 31	SLACK, Robert B. ...	Aug. 16
BLÉRIOT, Louis ...	Oct. 4	LANCHESTER, F. W., M.I.C.E. ...	Jan. 4	SOPWITH, T. O. M... ..	Feb. 8
BLONDEAU, Gustave... ..	June 7	MCCLEAN, Frank K. ...	Mar. 15	SPRATT, Norman ...	Oct. 25
COANDA, M. ...	May 24	MANNING, W. O. ...	Mar. 22	THOMAS, G. Holt ...	Mar. 8
CODY, S. F. ...	Feb. 1	MANTON, Marcus D. ...	Oct. 18	TURNER, Lewis W. F. ...	Aug. 9
		MAY, Fred ...	Sept. 13	WRIGHT, Howard T. ...	April 5



No Upside Down Flying for French Military Pilots.

A SPECIAL Army Order has been issued by General Bernard, the new Director of Military Aeronautics, prohibiting military aviators from attempting to follow the example of professional pilots

in making flights which, it is stated, have only a sporting interest. Any military pilots who ignore this order will be guilty of a "breach of discipline that can in no way be tolerated," and commanding officers have been instructed to deal rigorously with any offenders.

ARMCHAIR REFLECTIONS.

By THE DREAMER.

ONE of my ancestors must have been a skulking outlaw! The truth of the theory of heredity is vividly brought home to me periodically when I get the "wander lust" and cannot help myself, but must needs go out into the woods and forests, and there, far from fellow man, push about through thicket and bramble and allow my imagination to run riot.

I am not content to roam about like an ordinary person—and here the outlaw theory slips in—but must dress myself up in a fashion more nearly resembling a poacher than a respectable law-abiding member of the community. Thick boots, leggings and riding breeches, form the greater part of my clothing, and I only wear an old Norfolk jacket, because I do not possess one of fustian. A cap and a thick stick complete the outfit, and if I can only get up to my neck in mud I am happy.

I know my Epping Forest pretty well, and love to tramp its green rides, and, sitting on a fallen tree, live again the days of yore.

It does not require any effort of the imagination on my part to see again the Virgin Queen riding to the hunt at the head of her merry company of nobles and courtiers, or, again, riding her white palfrey up the broad oaken stairs into the banqueting hall of her hunting lodge; the same room that was on occasion used as a court-room in which to administer mediæval justice. "The King's Red Deer" are no more, but there are plenty of fallow deer, and they serve to remind me that in the "good old times" the punishment for even worrying these royal animals was the lopping of ears, and to kill one for food meant death to the miscreant, until these grotesque laws were repealed by Richard I.

Robin Hood and his merry men still, for me, flit about the glades and glens, and at dusk I can see the notorious Dick Turpin on Black Bess, or the Waltham Blacks who struck terror into the countryside, lurking behind every tree. At Loughton Earthworks I see again the camp of the Romans, and Ambresbury Banks glitter once more with broadsword and shield. Celt, Dane, Saxon, Roman—the Danish King Canute and the feudal William, made their marks which have remained through nine hundred years and may be seen to-day.

I see again the Epping Hunt, which always took place on Easter Monday, and grieve to think of the roundabouts and shooting galleries to which it has now degenerated. On these days of "wander lust" I always feel the spirit of lawlessness stirring within me; I want to do things I ought not to do, and recognise in this the outlaw ancestor. But the forest is open to me to roam, and none can say me nay; yet there remains to me one thing whereby I may feel I am defying the law—being a *bona fide* traveller I can enter an inn and demand refreshment during prohibited hours, and this I always do, choosing the tap-room with its high settles, and its

wide open fireplace for my resting place, and quaff good brown ale from a blue earthenware jug with a black weeping-willow tree depicted thereon.

It was in such an inn in the middle of the forest on Sunday last that I rested for a while. I had dreamed my dreams in the green rides; I had smoked my pipe in the company of bowmen in green jerkin and soft-topped brown boots, in the dark glens, and I had successfully banished aeroplanes from my head for the whole day. In the tap-room with me were three strangers, and I could not help but hear their conversation. As I entered, one of them was telling how he still had a push-bike that came out of one of the Stanley shows, and which he had ridden on his rounds (evidently as a collector for some firm) for over eighteen years, and which had never had any single part replaced, with the exception of tyres. He told how the manufacturers re-enamelled it and replaced tyres free of charge every year for him on the understanding that when finished with, he should give them the machine for exhibition purposes, he having kept a record of mileage throughout the whole time. He told how he had once forsaken the old love in favour of a motor cycle for two days, and how, at the end of the second day, after descending a hill somewhere north-west of Hatfield, he entered an inn by the front door, bike and all, and finished up, so far as he was concerned, on the other side of the bar, having cleared off two beer pump handles in the journey, to say nothing of sundry glasses; and how he sold out, with all faults and blemishes, for £15. "A push-bike was slow," he said, "but it was sure." One of his companions suggested an aeroplane might suit him, and that he would find it quite fast enough, especially if he bought one of the new Avro biplanes, which, he said, he had seen flying at Hendon on the previous day, and which, to his mind, was the fastest method of locomotion possible.

They went on to discuss aeroplanes in a way that showed that they knew quite a lot about them, mentioning several of the best known makes, and putting up quite good arguments for and against their speed and safety. They also seemed to know pretty well all the pilots by name, and talked on their skill in flying. Pegoud, of course, did not escape, and they discussed his flying in quite sensible style. And thus, I, who had striven to forget all about aeronautics for at least one day, was here, in the very centre of mediæval Epping Forest, suddenly reminded that the march of progress would not be denied; that there was no escaping it, no matter where one may go, and—that to-morrow was Monday, and the office would be waiting for my "Reflections," which were here placed into my very hands all written. Truly, the life of the journalist is easy, and copy is found in strange places.

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Chevilliard Loops the Loop.

ANOTHER large crowd, estimated at 25,000 people, visited Juvisy on Sunday, to witness some exhibition flying by Chevilliard, and they were rewarded by seeing this noted Farman pilot actually loop the loop.

First ascending to a height of 100 metres, Chevilliard did his *chute de côté*; he then rose again, and after a steep dive completely looped the loop. This manœuvre he carried out three times and followed it up by a series of fantastic flights including side dives, corkscrew twists and somersaults. After an interval, during which Champel carried a number of passengers on his giant biplane,

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Chevilliard made another series of similar flights. He was using an H. Farman biplane, with 80 h.p. Gnome motor and Integral propeller. Late in the evening, Chanteloup, who had arrived at Juvisy earlier in the day from Crottoy, looped the loop on a Gnome-Caudron. The next morning Chevilliard returned on the machine to Buc, but before leaving Juvisy he looped the loop with M. Philippe Panet—the first time the manœuvre has been carried out with a passenger. On arrival at Buc he repeated the performance, and similar flights were made at Buc and Juvisy on Tuesday and Wednesday. We make further reference, on page 1283, to others who have succeeded in looping the loop.

THE RIGHT TO FLY.*

By ROGER WALLACE, K.C.

Up to now, the main conception of boundaries has been those of a lateral description, but now we have to regard the question from the point of view of three dimensions of space, which is to some almost as difficult mentally as the mechanical evolutions of Pegoud in the air.

Every maritime ocean and every continent has its boundaries and limitations in all directions, but the aerial ocean has only one boundary, only one frontier, and that is the surface of the globe which it imprisons in its embrace. It requires, and has in fact, no lateral support beyond its own, and, as far as we know, no definite external restraining force. This description, it will be observed, applies not only to the air as an element, but to the air space containing the element.

We have called maritime oceans names, such as the Atlantic, Pacific, &c. Are we now going to give names to portions of the atmosphere in the same way? No! We should look on that element as one, the property of no nation, of no individual, but as common to all nations and individuals, subject to certain rights already acquired by and inherently essential to States and individuals.

Human flight is accomplishing a peaceful revolution in the views of mankind, and in making laws for aerial navigation, and more especially to those pertaining to Customs, it is incumbent on the law-makers to endeavour to establish simple and practical rules which, while safeguarding these rights acquired by the States and by the inhabitants of the land, will assure the free development and untrammelled expansion of this latest aid to civilisation and universal peace.

Mr. Haseltine, in his "The Law of the Air," says:—"It is universally admitted that the air space over the high seas and over unoccupied territory is absolutely free to all States and persons desiring to use it; and we may, therefore, for the present, leave this air space entirely out of account."

I agree to this statement, with the following qualification: International lawyers and the powers have fixed the maritime limit at a distance of three miles from the coast, so that a State, according to this regulation, would have no sovereign right, or right of any kind, which would extend its aerial jurisdiction beyond the three mile limit. Now, the experiments of McClean, Samson, Curtiss, Hawker, and others, have shown that hydro-aeroplanes can easily be manoeuvred from warships. From their decks outside the neutral maritime belt, planes could easily be launched in the air and pass over the adjacent territory in a few minutes. Does this three mile limit aerial belt give sufficient protection for any nation suddenly attacked? The facts speak against this, and the Powers will have to consider the grant to nations of another limit giving them aerial rights, national easements, or whatever they may be termed, so as to ensure them sufficient protection of the nature accorded in the case of the maritime limit.

So far as I am aware, this is the first time this question has been raised, and no limit has been suggested. Twenty miles would hardly give sufficient security. The position of Great Britain and France at Dover would be difficult for diplomatists to settle if this limit were fixed upon.

As far as I can gather, there are several theories as to the right to fly. I have omitted from these definitions such terms as "the liberty of the air," of which I do not understand the meaning.

(1) That the air space is free to the use of all without restriction of any kind, and that over it no dominion, sovereign or otherwise, can be imposed. (*Res communis omnium*.)

(2) That the air space is free to all, except that aerial zones are already sovereignly possessed by States over the surface of the land ruled by them.

(3) That all the air space over the land and maritime belt adjacent is already within the possession of the existing sovereign Powers, subject to the right of innocent passage, and is only free over the remainder of the seas and maritime oceans and unoccupied land and deserts. (*Qui dominus est soli dominus est coeli et inferorum*.)

(4) That the air space over the globe is free to the use of the aircraft of all nations, and is only subject to such rights as are required by the subjacent Powers for their respective protection against attack, espionage, infection, infringement of fiscal rights, and any further danger to the life and property of their subjects.

In my view, Nos. 1 and 2 are impracticable, and Nos. 3 and 4, when practical regulations are framed, lead to the same results; but I suggest that No. 4 is the most logical theory, taking everything into consideration. For No. 1 we must wait for the millennium. In my opinion, No. 2 is rendered abortive by the adoption of the zone theory.

* Abstract of a paper read before the Aeronautical Society of Great Britain, Nov. 19th, 1913, at the Royal United Service Institution, Whitehall, S.W.

M. Fauchille first fixed the vertical limit of the free horizontal zone at a vertical distance of 1,500 metres from the surface, but subsequently agreed with Capt. Ferber's 500 metre proposal. Rollin places the limit at 300 metres, and others at various other limits. In attempting to give an innocent right of passage, the advocates of this system, contrary to their intention, only limit the facilities required. Why make the foreign aeronaut fly at all times at a prescribed height when the State can be protected by other regulations, such as those proposed by the Fédération Aéronautique Internationale, with much more security to itself and much greater control of the traffic?

No. 3 in effect affirms the sovereign power of the State, but grants to aircraft a limited right of passage through the air space, while No. 4 claims the freedom of aerial circulation, subject to the right of subjacent States to secure their conservation by certain rights.

Perhaps the best way to accentuate the difference between No. 3 and No. 4 is that one gives the chief place in the definition to the liberty of aerial circulation and the other to the sovereignty of the State over the air space above its land.

It is by adopting the spirit of Nos. 3 and 4 that the Commission of the Fédération Aéronautique Internationale, I believe, arrived at the measures described in the draft treaty.

When the International Commission met at Brussels, under the presidency of Prince Bonaparte, they had the advantage of the persons of experience in aeronautics and jurists who had attended most of the other conferences held, not only by the Aero Clubs and Associations in their various respective countries, but also the opinions of other societies which looked at the matter from the judicial point of view, such as those held by the International Law Society and the "Comité Juridique International de l'Aviation."

After a great deal of discussion on the principles and theories which should govern the aerial laws, both lawyers and practical men came to the conclusion that it would be inadvisable to discuss the question of sovereignty, because in time of war the Powers would act as they thought best in their own interest. Generally speaking, as far as I can gauge the views of the members of the Commission, their decisions were based upon a compromise derived from a blending of three principles:—

(1) The principle of sovereignty of the State which has its birth in the nature of national independency and which creates the obligation of those who rule the State to take precautions and to furnish means of self-defence embracing all the necessary machinery for national and individual safety and security.

(2) The principle of the so-called "Liberté de l'Air," which guarantees the independence of aerial flight, and assures impunity against the infraction of published regulations so long as it is impossible to identify the aeronaut, and so long as he has not made a descent.

(3) The principle of freedom of circulation, which in our days places so many facilities at the disposal of the individual for enjoying the right to go from one country to another without being unduly inconvenienced by police and Customs regulations.

All the time, however, there was an undercurrent of feeling that because of the internationality of the air it could not be the exclusive property of any State, and that no State could exercise its jurisdiction beyond such a point as it could establish an effective police, and that, therefore, the States were obliged to sanction this condition of affairs by making international regulations in common; hence the necessity for providing for national and international registers, so that aircraft could be easily identified, in order to render them subject to all penalties arising from breach of regulations, whether national or international.

I pass now to another International question:—The use of Explosives and Projectiles from Balloons and Airships.

The Hague Conference in 1899 passed a vote, which was accepted by all the powers, prohibiting aircraft from discharging projectiles or explosives, leaving them free to be used for intelligence and other purposes, but the term of the prohibition was limited to five years from that date and expired in 1905. This declaration was again passed at the second Hague Conference, 1907, the period of five years being changed and extended until the termination of the third Peace Conference (1914). However, a large majority of the nations failed to give their assent, among whom were Germany, France, and Italy; it is now only binding on the contracting Powers, among whom are Great Britain and Austria-Hungary. According to the Convention the terms are only enforceable amongst the contracting Powers, so that in a war between Germany and Great Britain the declaration would not be in force, and if, say, Great Britain and Austria (contracting parties) were at war and joined by allies from among the

non-contracting Powers, they would be freed from their obligations. Practically then this regulation is a dead letter and could not be enforced, so that in a European war nations would be free to use aircraft in any manner they please, except against undefended places, which by another article are protected from any bombardment whatsoever. The complete change in the position of the Powers was due to the increased facilities for dealing with aerial navigation, the former pious opinions having been expressed when the matter was really one of indifference or of very little practical account.

Article 25 of the regulations of the Law of War on Land was in 1907 extended by the addition of the words "by any means whatever," so as to include the dropping of explosives by airships or aeroplanes.

Now as it is proposed that guns and projectiles should be used to attack aeroplanes, and as no doubt there will be magazines and arrangements for this purpose in large open towns, it will most likely be held that they are places fortified against aeronauts. It would be better then to leave undefended towns undefended as regards aircraft, as it appears to me that in that event they would suffer much less injury.

I have already alluded to the use of balloons at the siege of Paris and the irritation which was caused by the threatened treatment of aeronauts as spies by Bismarck, and it is pleasing to say that this question was settled at the Hague Conference of 1907, following the decisions at Brussels in 1874 and at the Hague in 1899. Of course, balloonists have otherwise so to conduct themselves as not to act clandestinely or on false pretences. In order that there should be no doubt about the matter it was stated that to this class belongs the case of individuals sent in balloons to deliver despatches to maintain communication with the various parts of an army or of a territory. The danger would then be that they might be treated as prisoners of war.

One of the most important arguments that the advocates of the principle—freedom in aerial circulation—can advance is that already in regard to wireless telegraphy the principle that the air is free to the use or passage of Herztian waves has been adopted.

Mr. Haseltine evidently feels in his advocacy of the principle of "national sovereignty in the air" that this advocacy in the direction of freedom requires to be rebutted, and his only argument is that there is an important distinction between Herztian waves and aircraft. As regards their relation to the land and air space, he says that the passage of Herztian waves results in no danger to the land and no interference with anything in the air space, whereas the passage through air space (of great and substantial bodies) results in danger to property and persons below. I do not think that his argument is very strong, because the size of the aeroplane is not of such a large and substantial nature as Mr. Haseltine seems to believe. The popular idea is that from every one of these airships continual jettisons of objectionable matter will be poured on the surface of the earth and that inhabitants will be in constant dread of the vessel itself descending and injuring persons on the land. Now when the matter is looked into the persons on land who have been killed by the fall of aeroplanes have been so few as to be practically negligible, and there is practically no complaint of jettison from an aeroplane, in fact it is well known that even when from a dirigible or free balloon you empty a bag of ballast practically none of its contents ever reaches the earth except in such finely divided state as to be undiscernible. I do not say that the passage of Herztian waves through the atmosphere does any harm, but certainly the passage of an aeroplane through the atmosphere equally does no harm. If big vessels such as the Zeppelin are to be used they will only be used if they are successful and do not bring about these dire results which Mr. Haseltine anticipates. All rights proposed to be governed are subject to the power of the owner of property and the territorial state to prevent the passage of air waves if such passage does harm to the landowners' or State's legitimate interest, and it seems to me that no more harm could result to the individual or the State by the use of airships than is likely to result in the disturbance of wire telephones and telegraphs by the passage of Herztian waves.

By the Berlin Convention an international office was established for wireless, similar to that already existing for post and telegraphs at Berne. The duty of this office is to prepare for any alterations of the Convention which might be necessitated because of the advance of the art, and also to collect all information and do administrative work as may be required in the joint interest of wireless telegraphy.

It is impossible in this paper to go into the various work that has been done and the decisions that have been arrived at so far, on the positions of neutrals in time of war in regard to wireless telegraphy, jettisons and other matters; but I do think that the time is ripe for the establishment of such an international office, and this could easily be done by adoption of the organisation of the Federation Aeronautique Internationale, which is in touch with every certified pilot throughout the world. Of course alterations would have to be

made in the regulations and constitution of the Federation, but this would be a very easy matter to thoroughly accomplish without delay.

National and Private Law.

Personally, I am not in favour of legislation at the present time. I think a great deal more study of the question and further experimenting with a view to safety of aircraft is required before the time is ripe for legislation. What is really required is for the State to give proper grants to make these tests. Although the Government have done good work in aiding the National Physical Laboratory, the State has practically done nothing to really assist airmen in their work. The apparatus for testing materials at the laboratory at Bushey is becoming efficient, and is at times of great help, and the officials are always kind and do the best that can be done with the limited funds at their disposal. To gather together a number of personages with great names to meet once or twice a year to make a lengthy report, although very interesting and valuable in the future, does little to give practical help to the present craftsmen in the art or to arrive at any new types in aeronautical machines. Considering many men are so interested in the subject as not only to devote their time but their lives to the achievement of the conquest of the air, a Government grant of a few hundred thousand pounds would be a mere trifle, and properly distributed would be far more productive in the directions of advancement in the skill of flying and improvements in the machines.

The only laws that have been passed up to the present have been of a restrictive kind, and I am afraid if an immediate legislation were brought about at once the law-makers would not be sufficiently accustomed to the sight of aeroplanes and would look at the subject on which they had to legislate very much in the same way that horses looked on motor cars in the early days. Of course, the present attitude of the equine race is quite different. Not so long ago you remember it was thought necessary to have further legislation in connection with the motor car traffic. The earlier legislation had stopped the development for nearly 100 years. To my mind it would have been quite sufficient to have abolished the old Act and have relied on the Highway Act, 1835 (5 and 6 William IV c. 50). The principal thing that the new legislation did was to encourage the idea that as long as you were going 20 miles an hour you could do no harm, and that the moment you went over it you became a general danger to the public, even when you were going along the roads with nobody in sight or, in fact, nobody near with the exception of the gentleman placed in covert for the purpose of making observations. There would have been, I believe, less accidents if the speed limit had never been adopted. The fact is the House of Lords recognised this and passed the Act without the speed limit, and it was only when it came down to the House of Commons that this limit was inserted. Fortunately at present there is no law which forbids you to fly in general, and the only good that the law can do would be to say that the airman has a right to be in the air with his machine provided he does no appreciable harm to anyone else—in other words, that the State should acquire by Statute the right to govern air traffic so that the aviator could fly not on sufferance but of right. The belief has been handed down from the times of the Romans that the exclusive right of property in the air is vested in the owner of the surface of the land below—*cujus est solium eius est usque ad coelum*—and the greatest English writers, such as Coke and Blackstone, have given their adherence to this doctrine in the widest sense, namely, that the landowner owns the column of air above his land to the sky. Of course nobody can doubt that he should have the use of so much of the aerial space above his land as may be necessary for the construction of buildings or for works, but I imagine that this definition resulted from imperfect knowledge and from want of prophetic vision. Had lawyers but foreseen the use to which the air would be put as a means of communication they could not have been likely to appear to accord an absolute property to the landowners in the whole column of air above the surface of the land—they would merely have given an easement to use so much of the space and abstract so much of the fluid as might be essential to the uninterrupted enjoyment of their property in the freehold of the land. Because there have been a series of legal maxims arrived at without due appreciation of facts, materially substantial; these not being present to the minds of the creators of these maxims, and even though these maxims have been followed by the greatest lawyers who were also ignorant of the circumstances; I fail to see why we should not adopt the view that the freeholder of the land has merely an easement. If so, no new law would be necessary. Of course the matter would have to be fought out, and I do not anticipate that any decision below the House of Lords would be accepted, and then only because there is no higher court to go to.

The German Civil Code establishes the right of the owner to the entire air space above the surface of the land and to all below; but rather inconsistently it goes on to enact immediately afterwards that

the landowner cannot exclude persons from the use of the air space above his land, if he has an interest in so doing. The Swiss Code enunciates a similar principle.

It appears to me that this Code gives to anybody the right to use the column of air provided he does not interfere with the interests of the owner of the land who possesses the freehold. At English common law the owner of land in England is held at present by the Courts to own the column of air space to the skies, but to have no effective right to prevent an aviator flying through that column when no, or next to no, damage is done to the landowner on the principle of "De minimis non curat lex." This is a good way out of the difficulty at common law, but merely a makeshift; clearly if judges wish from case-made law to build up a consistent theory they must start with the principle of easement, and not, as Mr. Haseltine suggests, of absolute ownership. Lord Ellenborough had evidently great doubts about the matter, as is seen from his judgment in *Pickering v. Rudd* (1815) on the question of a projection overhanging a plaintiff's garden. In his judgment he says that if an action for trespass could be brought in such a case it would follow that an aeronaut would be liable to an action on the suit of the occupier of every field over which his balloon passed in the course of his voyage. Other eminent judges have commented on this case, but the most interesting is that of Lord Blackburn in *Kenyon v. Hart* when he said:—"I understand the good sense of Lord Ellenborough's view; but not the legal reason for it." As the legal reason in Lord Blackburn's mind, as far as I can discover in the various judgments and expressions of opinion, is founded upon the well-known maxims, which are merely assumptions, I do not see why the Court should be bound now that the means by which the air can be used are becoming known. Why cannot a new definition of the right be arrived at even though new maxims have to be invented more consistent with actual conditions? There has been no general grant of this freehold, and there certainly has been no sufficient occupation of the alleged property to have ever given the freeholder of the land the dominion which he has been alleged to possess. On my first consideration of this matter I held the view of which Mr. Haseltine is so able an advocate, which I may say is the view of

English lawyers almost without exception; but when we are inaugurating a new era of communication which will eventually be the most comfortable, the most rapid and the most efficient in many respects of all, why should judges be trammelled by the authors and decisions of the past when they can perfectly and consistently adopt a new and better theory.

The Home Office kindly let me see a draft of the proposed Bill for regulating traffic in this country, but I congratulate them on keeping it back until the industry has had a chance of developing. If legislation is commenced, the first thing that would have to be done would be to take away the alleged right from the landowners.

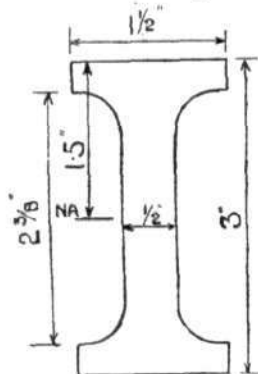
In opening the discussion on the Paper, Mr. Mervyn O'Gorman stated he was of opinion that there should be a free right to the air; and emphasized the difficulty of making regulations effective, which imposed any restrictions as to the place of descent or which involved the right of search. He pointed out that, at the present time, the aeronautical industry is in an infantile stage, but is developing so very rapidly, that he thought that in a very few years there would be a regular aeroplane service in operation between this country and France. To effectively cope with the enormous number of machines that would then require tracing and examination a large army of officials would be necessary, and this factor would seem to present almost insuperable difficulties; especially as by doubling in the clouds it would be possible for a pilot who desired to avoid a search to elude his pursuers.

Mr. Berriman suggested that if the Government subsidised the aerodromes, it might be possible to, at any rate, partially overcome the difficulties by compelling all machines to descend within these areas.

Mr. Justice Atkins, in summing up, said that Law was largely based upon usage and custom, and was accepted by all civilised countries, but as affecting the law of the air there was not, at present, any common basis of agreement between any two nations. He considered that immediate steps should be taken to formulate an agreement that imposed the minimum amount of restriction, since as time elapses the Governments of the various countries would institute rules and regulations for their own protection, that it would be extremely difficult to revise, when once they became established.

ELEMENTARY STRESSES.

THE area of an I section spar such as that shown in the sketch is approximately the area of the enclosing rectangle (3×1.5) less the area of the hollow grooves ($[\frac{1}{2} \times \frac{1}{2} \times 2.375]$ with an allowance for the rounded corners. If A is the area in square inches then, approximately, $A = 2.25$ inches².



The strength of the section to resist bending is given by its "moment of inertia" which is proportional to its breadth B and to the cube of its depth D . Thus, for the section in question,

$$I = \frac{BD^3 - bd^3}{12} = \frac{(1.5 \times 3^3) - (1 \times 2.375^3)}{12} = 2.26 \text{ inches}^4.$$

The neutral axis y of a section that is symmetrical above and below the axis is midway between the flanges. Thus $y = 1.5$ inches.

The modulus of the section Z is $Z = \frac{I}{y} = \frac{2.26}{1.5} = 1.5$.

And the stress f induced by a given bending moment

$$M \text{ lb. inches is } f = \frac{M}{Z}$$

If the beam is a cantilever, i.e., fixed at one end and free at the other, and is l feet long, then a uniformly distributed load w lbs. per inch run produces a maximum bending moment at the fixed end of

$$M = \frac{wl^2}{2} \text{ lb. inches.}$$

If it is supported at both ends, the maximum bending moment in the centre of the beam is $M = \frac{wl^2}{8}$.

If it is part of an elementary continuous girder having two equal spans equally loaded, then the maximum bending moment is of the above magnitude, but occurs at the central point of support.

If for the sake of example $l = 6$ feet = 72 inches and $w = 1.5$ then, as a supported beam, $M = \frac{wl^2}{8} = \frac{1.5 (72^2)}{8} = 975 \text{ lb. inches,}$

and the stress induced is $f = \frac{M}{Z} = \frac{975}{1.5} = 650 \text{ lbs. sq. inch.}$

If in addition there is a simultaneous end thrust along the axis of

the spar amounting to say 300 lbs., then the compression stress due to this force separately is $f_c = \frac{F}{A} = \frac{300}{2.25} = 133 \text{ lbs. sq. inch.}$

Further, the distributed load on the spar causes a bending deflection δ amounting to $\delta = \frac{wl^4}{8KEI}$ where K is a coefficient depend-

ing on the type of beam and is 78 for the case in question. E is the modulus of direct elasticity, that is to say, the ratio of stress to strain within the elastic limit of the material expressed in terms of the computed force required to stretch a piece of the material of 1 sq. inch section to twice its original length. For ash, $E = 1,300,000 \text{ lbs. ; thus}$

$$\delta = \frac{1.5 (72^4)}{78 \times 1.5 \times 10^6 \times 2.26} = 0.176 \text{ inch.}$$

This deflection affords a leverage for the compression force on the spar to produce a bending moment M lb. inches; thus—

$$M = 300 \text{ lb.} \times 0.176 \text{ inch} = 53 \text{ lb. inches.}$$

Suppose further that the compression force on the spar is due to the pull of a wire attached 1.7 inches below the neutral axis. Then there is a further bending moment due to the attachment amounting to

$$M = 300 \times 1.7 = 510 \text{ lb. inches.}$$

If the total bending moment on the spar is equal to the sum of the individual moments, then it has to withstand

975 lb. inches	due to the distributed load,
53	" compression and deflection,
510	" attachment.

Thus the total is 1,538 lb. inches, but it must be remembered that this value does not allow for the cumulative effect of the deflection as increased by compression force itself and by the bending due to the attachment.

The stress in the spar as computed from the above bending moment is thus: $f = \frac{M}{Z} = \frac{1538}{1.5} = 1,020 \text{ lbs. per sq. inch, to which must be added the compression stress of 133 lbs. per sq. inch, thus making a total of 1,153 lbs. per sq. inch.}$

It is, in general, the endeavour of designers to avoid stressing timber much above 1,000 lb. per sq. inch in cases where the nature and magnitude of the maximum stress is uncertain and the consequences of failure are serious.

"LOOPING THE LOOP" SPREADS.

"LOOPING the loop" and flying upside down is no novelty at Buc, for not only have Mr. B. C. Hucks, Hanouille, Perreyon and Domenjoz carried out such flying on Blériots, but Chevilliard has

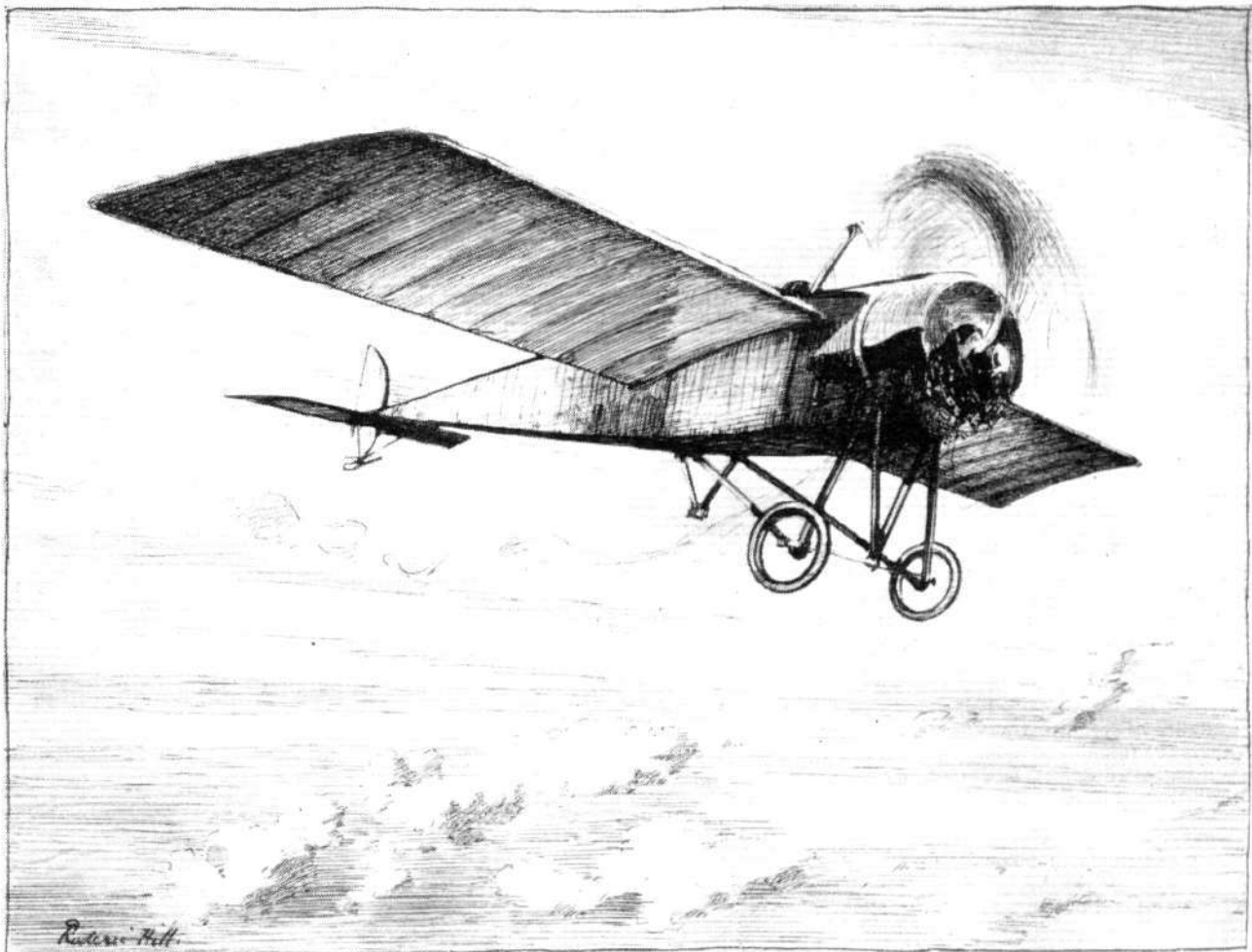


Mr. B. C. Hucks.

gone through the same evolutions on a biplane, and has progressed a step farther by doing it with a passenger. Our readers will, however, be most interested in the doings of Mr. B. C. Hucks, who at any rate has secured the title of being the first Britisher to voluntarily loop the loop and fly with his machine inverted. After seeing Pegoud's exhibitions at Brooklands, Hucks was fired with an ambition to emulate him, and decided to make an attempt at the first opportunity. About a fortnight ago he went over to France, and after a conference with M. Blériot commenced training. In the meantime his machine was altered, under M. Blériot's direction, to suit the altered conditions under which it was to be used. Everything was ready last Saturday, and in spite of wind and rain, Mr. Hucks decided to make the attempt. He made one of the S dives, the machine being on its back for 9 secs. He also flew the machine upside down for 30 secs., and twice he looped the loop. This latter part of the performance he repeated again during the afternoon. Hucks was using a machine fitted with a Gnome engine and Chauviere propeller. Afterwards Hanouille came out on a similar machine but fitted with an Anzani motor, and he gave a remarkable performance of looping the loop, diving sideways, &c.

On Sunday afternoon, both Hucks and Hanouille gave demonstrations, Hucks flying upside down for 35 secs. and 40 secs., and looping the loop five times. Hanouille also flew upside down twice, and made several loops. Hucks beat his own record on Monday by making ten loops, while he also did a very fine corkscrew twist. He arrived in London on Tuesday, and was met at Charing Cross by a party of friends, who chaired him *tête en bas*. Mr. Hucks says that he trained for his upside down flying by being strapped in a chair, and suspended upside down for various periods ranging from five to fifteen minutes.

On Tuesday afternoon, Hanouille carried out a series of flights, including turns with the planes vertical and looping the loop, and after he had landed, Perreyon and Domenjoz, the Blériot *chef-pilotes*, each flew upside down and looped the loop. These performances were watched by a large number of leading pilots, including MM. Morane, Saulnier, Garros, Andemars, and Gilbert.



An impression of Mr. Claude Grahame-White flying a Morane-Saulnier monoplane at Hendon in the first week of this month. From an original drawing by Mr. Roderic Hill.

FOREIGN AVIATION NEWS.

A German Passenger Record.

ON the 12th inst. the German aviator Schirmeister, on a hydro-aeroplane, made a German record by flying with two passengers for 6 hrs. 16 mins. at a height of 1,100 metres.

Paris to Cairo Flight.

DAUCOURT and his companion, Roux, left Constantinople on Saturday afternoon, being escorted for some distance by Turkish military aviators. Crossing the Bosphorus, they entered Asia by Scutari. Flying along the Ismid Gulf and the Lake of Sabanja they eventually reached Adabazar, and landed for the night. There they were detained by heavy rains for several days.

New Farman Superior Pilots.

AT Buc, on the 10th inst., Herbiere, a Comite Nationale pupil at the Farman School, made one test for a military *brevet* over the triangular course, Buc-Chartres-Orleans, and on the previous day Jacquemont, also on a Farman, made one test over the Etampes-Mailly Camp course.

Helen's Attempt for the Michelin Cup.

STILL continuing to reel off five laps a day of the Etampes-Gidy course, on his Nieuport-Gnome monoplane, Helen had up to Monday evening flown 9,594 kiloms. on 18 consecutive days. Including the nine days' flying of the credit of which he was deprived by a technical infraction of the rules, Helen has flown 14,391 kiloms. in 27 days.

A Borel Superior Pilot.

IN a flight to qualify for a superior *brevet*, Mouthier, on his Borel monoplane, on the 15th inst., flew from Amberieu to Dijon in an hour and three-quarters.

High Flying on a M. Farman.

ON the 13th inst., Corporal Prudhommeau, on a M. Farman biplane fitted with 85 h.p. Canton-Unne motor, was flying at a height of 3,500 metres.

Fast Flying on a Caudron.

FLYING with a very strong wind, Guillaux, on a Caudron-Gnome, on the 13th inst. went from Etampes to Juvisy in 10 mins. The wind was so strong when he started that the machine appeared to climb practically vertically.

A Blériot Superior Pilot.

STARTING from Amberieu on his Blériot monoplane, Beard, on the 11th inst., flew to Lyon, and landed at Bron. After a stop of three-quarters of an hour he went in a straight line to Tournus, passing over the Dombes and the Breese. He then returned to Amberieu, being considerably buffeted about by the wind when in the neighbourhood of Macon.

Long Cross-country Flight with Two Passengers.

ON the Maurice Farman biplane, with Canton-Unne motor, which he is to compete for the Michelin target prize, Gaubert, with two passengers on the 12th inst., flew from Buc to Mourmelon in 1 hr. 25 mins.

French Military Aviator Killed.

ON the 12th inst. Capt. de Lagarde was killed at Villacoublay. He had arrived from Rheims, and was making a *vol plané* when,

at about 5 metres from the ground, the machine dived vertically, the pilot being thrown out and killed on the spot.

A Mishap to Seguin.

AFTER flying over Versailles for some time on the evening of the 12th inst., Seguin returned to Buc, and was landing, when at a height of about 15 metres the biplane capsized, and both the pilot and his mechanic, Andriot, were thrown out. Seguin had both his legs broken, while the mechanic sustained serious injuries to his spine.

A Voisin for French Navy.

THE Voisin firm are just about to deliver to the French naval authorities a Canard hydravion fitted with a 100 h.p. Gnome motor. The trials will take place from the cruiser "Foudre" shortly.

Flying from France to Corsica.

A FINE flight was made on Thursday of last week by Lieut. Delage of the French Navy, who piloted a Nieuport hydravion from St. Raphael to Ajaccio in Corsica. The machine is one of those attached to the aeroplane mother ship "Foudre," and details of the performance are being kept secret as far as possible. The distance flown is about 256 kiloms., or roughly 160 miles.

Pegoud in Germany.

ON the 13th inst., Pegoud made a series of his special upside-down flying, corkscrew twists and looping the loop at Cologne, among the spectators being Prince and Princess von Schomburg. The following day and on Sunday he was at Frankfurt, where his flying was witnessed by Prince Henry of Prussia, the Grand Duke of Hesse, Prince and Princess Charles of Hesse.

Bonnier Arrives at Vienna.

CONTINUING his flight across Europe, Bonnier, with a passenger, on his Nieuport-Gnome, on the 11th inst., arrived at Karlsruhe. The next day he was at Wurzburg, on the 13th he went on 300 kiloms. to Plattling sur l'Isaar, while, after a further 400 kiloms. on the 14th, he arrived at Vienna, landing at the Aspern aerodrome. After several days' rest, he resumed his journey, and on Monday he arrived at Budapest, after making a stop at Oudenburg.

Flying in Persia.

THE Russian pilot Kousminski claims to be the first aviator to fly in Persia, and last week he gave a series of exhibition flights at Tauris. Kousminski is using the same Blériot-Gnome machine with which he has during the past year made more than 150 exhibitions in Siberia, Manchuria, China, Indo-China, Siam, &c.

To Fly to the Persian Gulf.

THE accident to Seguin at Buc on the 12th inst. has temporarily suspended the arrangements which were being made by the Ligue Nationale Aérienne for him to fly from Paris to the Persian Gulf. The start had been fixed for December 5th, and supplies have been sent to Tripoli, Aleppo and Bagdad. An attempt is now being made to secure another aviator to make the flight.

An American Fatality.

FROM New York it is announced that while Lieut. Perry was flying, at the end of last week, on a hydro-aeroplane above Manila Bay he met with a fatal accident.



AIRSHIP AND BALLOON NEWS.

A Speed Prize for Dirigibles.

THE Dirigible Committee of the Aero Club of France is at present working on the regulations for a prize which it is proposed to create and which will be awarded in 1914 to the first dirigible which attains a mean speed of 100 kiloms. in the hour.

Lighthouses for Airships.

ANOTHER matter which is being considered by the committee is the possibility of organising a scheme providing for the erection of searchlights at prominent points to provide landmarks for aerial craft travelling after dark. It was stated that most of the airship hangars in Germany have a searchlight mounted on the roof.

Bomb Dropping from Airships.

SOME experiments in bomb dropping were carried out at St. Cyr, on Monday, from the "Adjudant Vincenot," which, with 11 persons on board, cruised over from its station at Issy.

A Dirigible Height Record in Italy.

AT the beginning of the week, the Italian military dirigible P5 made a new Italian airship height record by rising to 2,500 metres.

"Hansa" for Training Crews.

AS it will be some considerable time before the German Navy has another Zeppelin airship, the authorities have hired the "Hansa" for the purpose of training crews.

Balloon Race in France.

NINE balloons left St. Cloud on Saturday in the distance competition of the Aero Club of France, and the winner was "Le Moucheron," piloted by Ravaine, which landed at Brodek, near Olmuetz in Moravia after a journey of 1,200 kiloms. The "Daisy," piloted by Letellier, was second, landing at Liebenstein, by Eger, in Bohemia, 925 kiloms., while the "Tanite," piloted by Seratzky, was third, coming down at Woosloke, near Weiden, in Bavaria, 900 kiloms.

Two Long Balloon Voyages.

IN an attempt to beat the long-distance balloon record, MM. E. Dubonnet and W. Jourdain, in the "Condor," left Issy, and MM. Schneider, Pierron and Biename in the "Icarus" left Lamotte-Breuil on Saturday. The former balloon landed at Stanislau, in Galicia, while the other came down at Oulance, on the Black Sea, in Bulgaria, about 2,000 kiloms from Paris.

Models

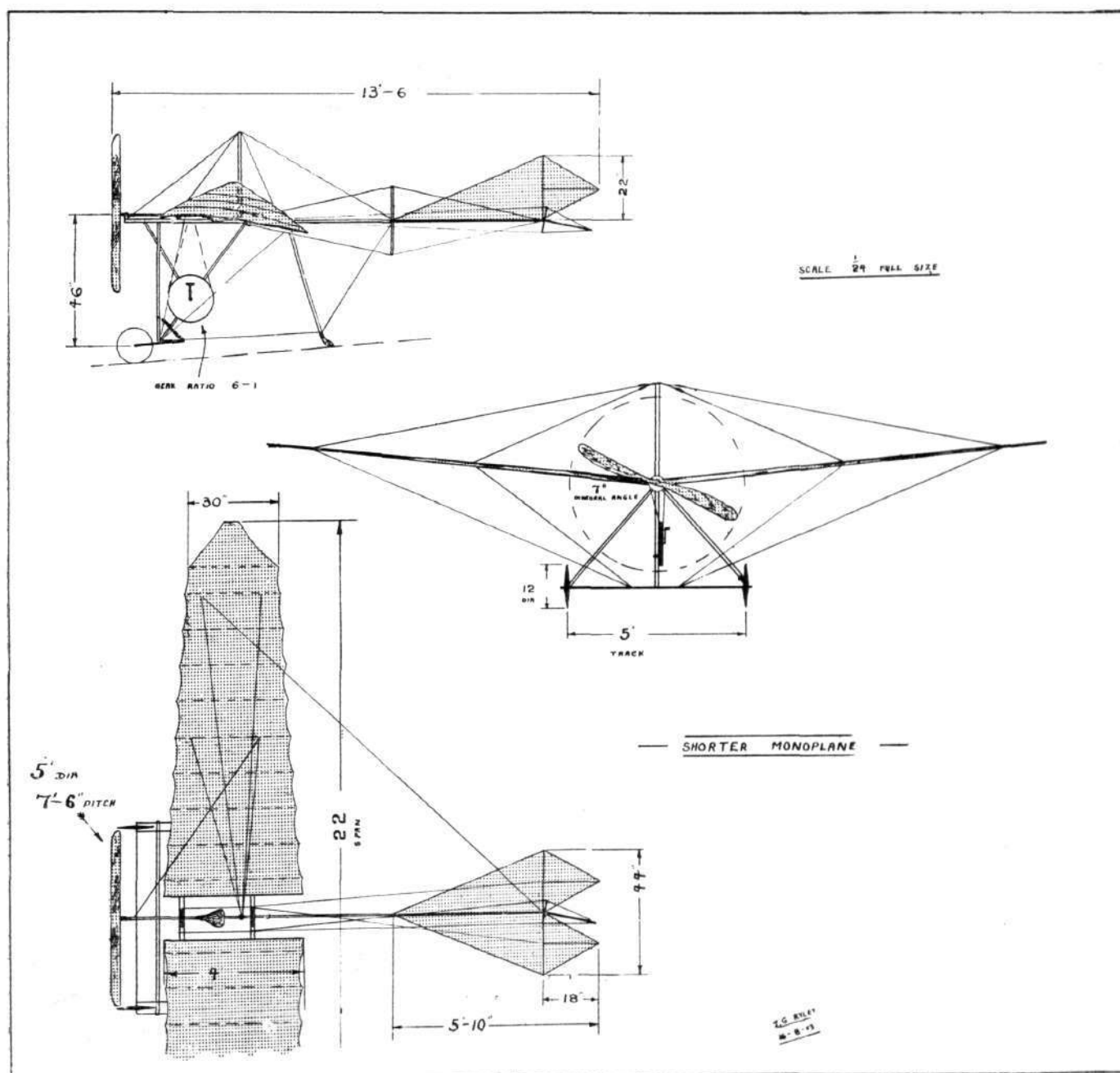
Edited by V. E. JOHNSON, M.A.

Cycleplanes and Their Possibilities.

MR. L. G. RYLEY, of the Coventry Aero Club, sends us the following very interesting account of some experiments made by Mr. Shorter, himself, and other members of this club, with the above-mentioned type of machine:—

"So little interest is taken by the general public in cycleplanes or pedal-driven aeroplanes and large gliders of various types that their possibilities from a sporting or experimental point of view are rather overlooked. One certainly has to be rather more than ordinarily interested in aviation to tackle the building of one of these machines, but we have an enthusiast (a member of the Coventry Aero Club), who has tackled the problem on practical and business-like lines, as will be gathered from the following. The two chief items the constructor had to consider were the usual ones, *i.e.*, that a large surfaced machine would be slow, but the resistance set up would probably be more than he could properly

control; or that with a lesser surfaced machine the resistance would be low, but the flying speed being high would prevent the same making lengthy flights. After due consideration it was decided to take the risks, and a machine of the latter type was started upon. As will be seen from the accompanying scale drawing, the machine is really a small tractor monoplane built on the usual lines. The material used in the construction is mostly bamboo (with the exception of the tractor screw, which is Honduras mahogany). While on the subject of propellers, it might be mentioned that the material for the screw was supplied by Messrs. Humber, Ltd., who have in the past spent considerable amounts in experimenting with aeroplanes. After the constructor had shaped this by hand it was polished by Messrs. Humber, Ltd., and I must say the result reflects great credit both on its designer and finishers. In one of the photographs the wings are shown detached and clipped along the fuselage, while the latter itself is also made to detach just behind



Plan, front and side elevation of the Shorter monoplane.

Scale drawings by Mr. L. G. Ryley.

the pilot's seat. Spring wheels were originally fitted, but they were found to retard the machine's speed somewhat whilst taxiing on the ground, and were consequently removed.

"The propelling force is transmitted to the tractor-screw by a system of wooden pulleys and a leather belt.

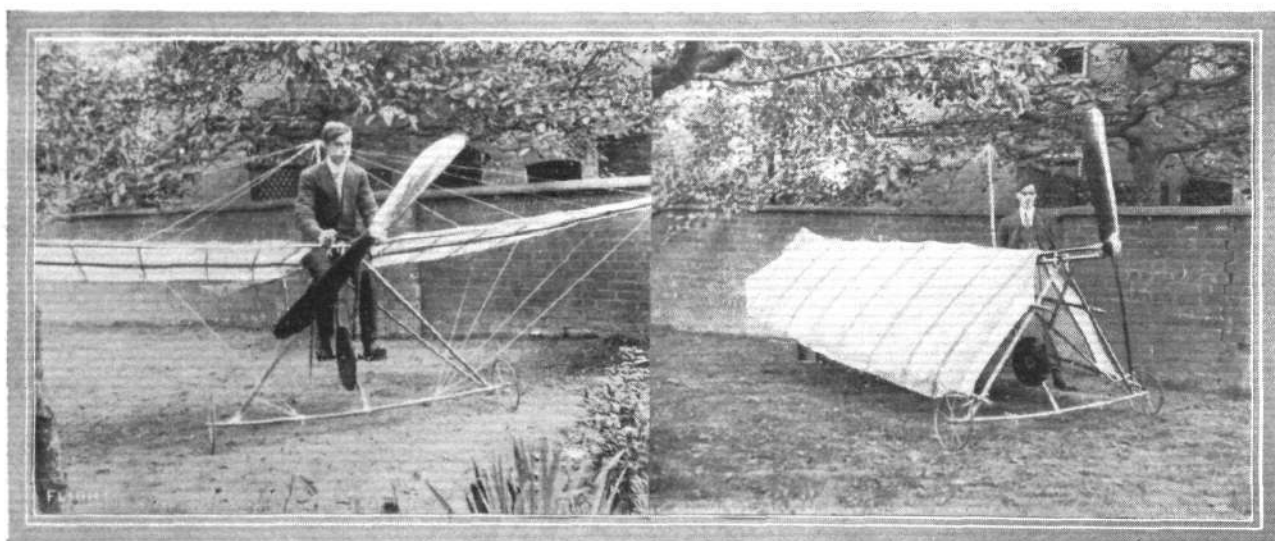
"The designer demonstrated the efficiency of this belt drive before the writer a few days ago, and it certainly looks very promising. The control of the machine is very similar to the one-time popular Antoinette monoplane, but two small levers are provided instead of hand wheels. Up to the time of writing, the machine has [not?] been tried as a cycleplane but as a glider. With the tractor-screw removed it has been towed (by a cycle) with very favourable results. It lifted easily, and its stability was very good indeed. Owing to the weather conditions it was impossible to take snap-shots, but as further trials will be made both as a glider and as a cycleplane, the writer hopes to be able to obtain some of interest."

Referring to the above experiments, one, like Oliver Twist, "longs for more." In other words, what thrust (static) can Mr. Shorter obtain with his 5 ft. propeller of 7 ft. 6 ins. pitch, how many r.p.m. can he obtain without undue fatigue, and how long can he keep it up? Also when the glider (alone, we presume) was towed by a cyclist, was a spring balance inserted in the towing line to measure the pull (or thrust)? Also in experiments which have been made by other clubs with towed gliders (man loaded) have spring balances been used to ascertain the same? If not, why not? As it so happens, the writer made some experiments a short time ago with a pedal-driven aerial propeller. It was not his intention to have published anything relative to these experiments until they were completed. As, however, owing to press of other work, this is likely to be some time, and with a view to any use they may be towards assisting forward any other experimental work of a similar kind, I give the results so far as I have at present carried them.



Some experiments with a pedal-driven aerial propeller.

under the circumstances. The gearing (as per illustration) was then increased to 12 to 1, and this was found to be about right. Without undue exertion, the writer (who is by no means muscular) was able to turn the cycle crank twice a second and thus drive the propeller 1,440 r.p.m.; this was continued for ten minutes without any undue fatigue. The thrust at 1,440 r.p.m. was 14 lbs., which is interesting because this is about what Mr. Mayer obtains with his



THE SHORTER MONOPLANE.—On the left the front view of the chassis and propeller drive. On the right the machine ready for transport, with wings clipped along the fuselage.

I should say that these experiments were undertaken to see what could be done towards driving a craft of the catamaran hydroplane type along water when propelled by an aerial propeller worked by foot power like a bicycle. The proposed floats (which are nearly completed) are two in number, 8 ft. in length and 8 ins. square vertical section; flotation capacity about 200 lbs. each. Their weight is very light, about 12 lbs. each. A skeleton wooden framework was covered with $\frac{3}{8}$ in. birch (supplied by Messrs. W. G. Evans and Sons); this was given two coats of Bragg-Smith varnish, and then covered with Jap silk and again given two coats of the same varnish. The tops—not yet completed—will be covered with well-varnished silk only. Before the construction of the floats was commenced, some preliminary experiments were made with a view to obtaining some idea as to what thrust an ordinary pedal driven aerial propeller would give.

A rough-and-ready arrangement, as per illustration, was knocked together, and this, originally built "as a cycleplane made for two," was afterwards altered to a single driven machine.

The propeller used (kindly lent the writer by Messrs. J. Bonn and Co.) was 3 ft. in diameter and of 2 ft. 6 ins. pitch, and was at first geared up about 4 to 1; this was found, however, to be quite useless, no resistance practically speaking being experienced, one curious effect being that it was somewhat difficult to keep one's seat

petrol motor, which gives, if I remember correctly, approximately $\frac{1}{4}$ h.p.

Now the propeller used by the writer was by no means a suitable one to obtain the best results owing to its small diameter, but I especially wished to try such a propeller at the commencement before deciding whether to continue the experiments or not. The results obtained, which were better than I had expected, decided me to pursue the matter further, but it will not be possible for me to do anything more to them for some four or five months. The propeller in my case is chain driven, ordinary bicycling fittings being used. Ball bearings, save in the case of the propeller, are used throughout. Two chains are shown in the illustration—the bevel gear wheels driving the propeller having the same number of teeth. But when again fitting up the apparatus, only one chain will be used and a 3 to 1 gear employed in the case of the bevel wheels. It has occurred to me that there might possibly be some advantage in having the propeller "free wheel." The case is, however, not at all analogous to that of the bicycle, as we have here merely the small momentum of the propeller, whereas in the case of the bicyclist one has the forward momentum of both man and machine. The wheels fitted to the apparatus were ordinary small iron ones, and the planks unplanned; nevertheless, all the young people shown in the photograph were able to propel the apparatus

along by means of the air-thrust from the propeller; even the little girl on the extreme left was able to accomplish this by standing on the pedals facing the propeller, and dancing up and down—the action was erratic, but there was no doubt about the result. Needless to add, the apparatus was much appreciated by the juvenile members of the family, and great disappointment was expressed when it was taken to pieces for storage purposes.

Mr. Shorter is undoubtedly quite right in using a propeller of large diameter, but whether the pitch should be so much as he has made it is a matter for experiment. I should much like to know what static thrust he can comfortably obtain. Personally, I think he has made a great mistake in using belts and not cycle chains.

Amongst several matters which occasioned me more or less surprise when driving an aerial propeller by foot power were the quickness with which full speed could be got up, and with which the propeller could be stopped, and the ease, comparatively speaking, with which it could be driven.

In the case of a boat driven by an aerial propeller, one does not want to use too large a diameter propeller, because every such increase means an increased height in the centre of thrust, which is just what is least desirable.

Whether anything further in the way of actual free flight can be accomplished by means of a cycleplane than a prolonged glide, appears to the writer very doubtful. A fair estimate as to such could, however, be made if we knew the static thrust which can be obtained from a propeller efficient for the purpose in hand. It appears to me that for a short time, at any rate, a thrust of 30 lbs., possibly more, could be obtained. What can Mr. Shorter tell us on the subject? Apart altogether from the question of gliders or flying, all questions appertaining to aerial propellers do undoubtedly come under the domain of aeronautics.



KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

British Model Records.

Twin screw, hand-launched	Distance ... R. Lucas ...	590 yards.
	Duration ... A. F. Houlberg ...	129 secs.
Single screw, do. ...	Distance ... H. Bedford ...	49 secs.
	Duration ... L. H. Slatter ...	365 yards.
Twin screw, rise off ground	Distance ... J. E. Louch ...	2 mins. 40 secs.
	Duration ... C. C. Dutton ...	266 yards.
Single-tractor screw, hand-launched ...	Distance ... J. E. Louch ...	68 secs.
	Duration ... C. C. Dutton ...	190 yards.
Do., off-ground ...	Distance ... J. E. Louch ...	45 secs.
	Duration ... L. H. Slatter ...	35 secs.
Single-tractor, do., do. ...	Distance ... C. C. Dutton ...	29 secs.
Twin screw, do., do. ...	Duration ... L. H. Slatter ...	60 secs.

Official Trials.—These trials take place to-day (Saturday) on the Paddington Club's ground at Sudbury. Those going should travel to Sudbury Town Station, District Railway. They commence at 2.30.

Gift of Trophy.—A trophy has been presented to the Association for Kite Contest by Mr. L. Ingram, A.F.K. and M.A.A. It will be known as the Kite and Model Aeroplane Association's Altitude Challenge Trophy, and the rules the donor suggests are as follows: 1. The trophy to be named the Kite and Model Aeroplane Association's Altitude Trophy, and to be held for one year. 2. Competitors may use any kite with the maximum measurement of 60 ft. computed by Kite Rule 2. 3. Any kind of line or wire may be used. 4. Each competitor will be allowed two assistants. 5. All attempts must be officially observed, on any of the following days: (a) The Aero Show Trial Day. (b) The Baden-Powell Challenge Shield Day. (c) The Trollope Challenge Cup Day. (d) The Michelin Challenge Trophy Day. 6. Each competing kite shall carry a self-registering altimeter. 7. Notice of trials must be given to the Association's hon. secretary seven clear days before trial. These rules are given so that intending competitors can get to work with their special kites.

Aero Show.—It is with regret that members and readers are informed that the official notices of the Aero Show's competitions are not yet finally decided on, and when they are they will appear in the official notices of the Royal Aero Club. Until such publication, it should be noted that any reference to the details of such competitions are entirely unofficial and unauthorised.

Dinner.—It is suggested that an informal dinner shall be held on Saturday, 29th, after the Kite Contest, at the Wimbledon Hill Hotel. All the Vice-Patrons, &c., will be invited, and it is hoped that all members who can will send in their names at once to the hon. secretary. Competition or morning dress. Ladies are also invited to attend. This is really a House-Warming Dinner of the country headquarters of the Association.

27, Victory Road, Wimbledon.

W. H. AKEHURST, Hon. Sec.



CORRESPONDENCE.

Pegoud's Feats.

[1810] I read with interest Mr. Robin's letter (No. 1807) under the above heading in your issue of November 8th, and if I may encroach on your valuable space I should like to say that I heartily agree with what he says as regards the "canting" elevator. I have made many practical experiments in this direction, and have found it to be a very efficient method of steering.

It is really remarkable what great directional control is possible over a machine with a slight lateral movement of the elevator bodily. The machine commences to turn in the direction of the "cant" from the very first, losing slightly in altitude, which could, of course, easily be counteracted by the pilot in a full-sized machine.

The elevator could be mounted on a universal joint, thereby

Very encouraging experiments have been made recently with barges for canal traffic (now so much neglected) propelled by such means. One of the great drawbacks to the use of a marine propeller for canal work is the ill effect of the wash or wake on the bank. Again, for very shallow waters or for water where weeds abound, the aerial propeller scores heavily. With respect to efficiency of travel at high speeds, the marine and aerial propellers appear to come out about equal, both having obtained results in the neighbourhood of 56 m.p.h. At low speeds the marine propeller is, I believe, the more efficient, but then one must remember that much more experimenting has been done in the case of the former than of the latter. Motor boats—model or otherwise—driven by a marine propeller do not come within the scope of the aeronautical engineer, but when an aerial propeller is used they most decidedly do so, which is a most valid reason why *all* such experiments should be encouraged.

Undoubtedly a great commercial future lies before a *fast* aerial propeller driven motor boat, which shall be (what at the present time hydroplane boats are certainly *not*) fairly comfortable for the passengers—I do not mean in England, but abroad and in some of the colonies.

Bicycles driven by an aerial propeller have on a good track attained a speed (for a short time) of about 27 m.p.h. That bicycles driven by a 5 ft. aerial propeller will ever go scorching about the road to the still further terror of pedestrians and others is of course absurd, but one should carefully bear all such achievements in mind before "pooh-poohing" experiments with similar apparatus. Any experiments which will or possibly can do anything to add to our knowledge of aerial propellers should be heartily welcomed. We shall be glad to hear from any other readers of *FLIGHT* who may at any time have made such experiments.



AFFILIATED MODEL CLUBS DIARY.

CLUB reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Bristol and West of England Aero Club (Model Section) (42, ROYAL YORK CRESCENT, CLIFTON, BRISTOL).

MODEL-FLYING meetings at the Sea Walls every Saturday at 3 p.m. (weather permitting). First and second prizes for the two flights of longest duration by self-rising models at any of these meetings up to and including Saturday, January 3rd. 50 per cent. will be added to the durations of tractor machines.

Leightonstone and District Aero Club (64, LEYSPRING ROAD).

Nov. 23RD, flying as usual, Wanstead Flats, 10 a.m. Nov. 27th, at 8 o'clock, instruction at Club-room. Subject: Chassis.

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).

Nov. 22ND, K. and M.A.A. official trials at Sudbury.

Sheffield Aero Club (35, PENRHYN ROAD, SHEFFIELD).

Nov. 23RD, Committee meeting, 7 to 8 p.m. Please observe notices in Club-room.

Wimbledon and District (165, HOLLAND ROAD, W.).

Nov. 22ND and 23RD, usual flying; illuminated flying Sunday evening.

UNAFFILIATED CLUBS.

Birmingham Aero Club (8, FREDERICK ROAD, EDGBASTON).

DEC. 6TH, competition for Club's Championship Shield, 2 p.m., at Club's aerodrome. Entrance 1s.

Edinburgh Ae.Soc. (Model Section) (41, DRUMSHEUGH GARDENS)

Nov. 28TH, model meeting at North Berwick. Duration competition, 3 prizes. Train leaves Waverley 1.36 p.m.

Liverpool Aero Research Club (62, CEDAR GROVE, LIVERPOOL).

Nov. 22ND, flying at Stanley Park, 4 p.m.; models illuminated at dusk. Nov. 28th, general meeting, 8 p.m., Cedar Grove.

Manchester Model Ae.C. (890, CHESTER ROAD, STRETFORD).

Nov. 22ND, open duration competition at the Trafford Park Aerodrome, 2.45 p.m.; if wet, the following Saturday. December 1st, joint lecture with the Engineering Society of the Manchester School of Technology at the Technical School, at 7.30 p.m. Subject: "The Construction of Aeroplanes," by Mr. R. Chadwick.

S. Eastern Model Ae.C. (1, RAILWAY APPROACH, BROCKLEY).

Nov. 22ND, flying, Woolwich Common, 3.30 p.m. until dusk. Nov. 23rd, Blackheath, 7.30 to 10 a.m.



allowing both longitudinal and lateral movements singly or combined, and apart from ordinary elevating could be used for steering and recovering from nose-dives, besides doing away with the side resistance of a rudder.

My experiments were made with single propeller (1-1-P1-0) type machines, and I also found that the "canting" system quite overcame the turning movement due to the torque of the propeller, so common in machines of that type; in fact, it was a simple matter to send the machine round in opposition of the torque with only a very slight lateral angle in the direction of the propeller beat.

In conclusion, I may say I am contemplating building a full-size machine with control embodying the above features, and shall be pleased to let you know later with what success. Apologising for the length of this letter, I remain,

Folkestone.

W. POILE.

Suggested Model Competitions.

[1811] As Mr. A. M. Barrow has made the suggestion in to-day's FLIGHT (1809) that the K. and M.A.A. should hold handicap competitions, I should be glad to give my experiences of such contests. The Paddington and Districts Aero Club, I believe, were the first to hold such competitions, and looking back through the club's time book I find they were first held on July 6th, 1912. So successful have they been that two or three are held every month. Their popularity is due to the fact that every competitor from the record breaker down to the youngest novice has a chance of securing a prize. These handicaps have always, without exception, been sealed ones, i.e., no competitor knows how much start he receives until the competition is finished. This arrangement practically compels every competitor to do his best on every occasion, which might not be the case if he knew what start he was getting. The starts have throughout been carefully allotted by myself, and there has never been any sign of quibbling on this point. The results of these contests have sometimes been so close that the difference between the first three has been only two or three seconds.

I should certainly like to see a handicap competition organised by the K. and M.A.A., but on the above lines. I do not think a scratch competition held with a view to framing a handicap would be so conducive to a fair handicap as starts based on the at present known performances of aeromodellists. It would no doubt be a somewhat difficult matter to adjust the starts for the first contest, but subsequent contests, from my experience, would be adjusted fairly accurately.

Perhaps Mr. Akehurst or some member of the council of the K. and M.A.A. could be persuaded to make a sealed handicap, and I would further suggest that an entrance fee of sixpence be charged (sent in with application), and a further fee of sixpence be payable by starters. I have no doubt that the secretaries of model clubs would render any assistance required to make such a contest successful if they should be approached on the subject.

W. E. EVANS, Hon. Secretary,
Paddington and Districts Aero Club.

The Geisler Challenge Trophy Appeal.

[1812] As the decision of the Stewards of the Royal Aero Club on the above has been published, we now desire, as the stewards of the meeting at which the event took place, to make a clear statement of facts which we considered it would be improper to make public whilst the case was *sub judice*.

Prior to the start of the race for the Geisler Trophy we were shown by the clerk of the course (Mr. Whittaker) a letter from Mr. Perrin informing him that the competitor's certificate of M. Brindejone had been withdrawn. This letter was of a private nature, signed "Harold E. Perrin," but not as Secretary of the Club. It stated that the Grahame-White Company (promoters of the meeting) had been written to also.

We asked both the managing director and the general manager to produce their letter for our perusal but we could not get hold of it.

We were most anxious to ascertain if it was official, or, like Mr. Whittaker's, private and personal.

The machines were on the line, the start was long over-due, when we again asked the general manager for the letter, but again we did not see it.

Unwilling to delay the start any further, and quite decided that we should be wrong in preventing M. Brindejone from flying on the note shown to us by Mr. Whittaker, we decided to tell M. Brindejone that we had private information of his competitor's certificate being withdrawn, that we had not yet seen an official statement on the subject, and, therefore, we were willing to allow him to start if he understood that *win or lose he could not be considered a competitor* if we found on investigation that his certificate had been withdrawn by the Royal Aero Club. We explained to him both in English and French, and his reply was *C'est tout a fait juste. Je pars mme ca.*

We wish here to state most emphatically that, had we seen the letter in the possession of the Grahame-White Co., officially signed by Mr. Perrin as Secretary of the Club, no argument or consideration would have persuaded us to allow M. Brindejone to start, whatever our personal views as to the wisdom, justice, or otherwise of the Club's action might have been.

The following day, at the Royal Aero Club, Mr. Perrin produced a copy of his letter to the Grahame-White Co. which was officially signed by him as secretary. We then wrote to these gentlemen and informed them that under the circumstances M. Brindejone was not a competitor in the Geisler Trophy Race, and therefore our placings were amended, making Messrs. Brock and Verrier respectively first and second instead of second and third.

We trust that the above facts will make it quite clear that as stewards of the meeting under Royal Aero Club rules, we merely exercised our discretion in a somewhat difficult position in the manner we thought best, but always with the full intention of

upholding and not of *over-riding* the Club Committee, and we submit that in all we did, both at the aerodrome and subsequently in writing to the Grahame-White Co., we proved this to be the case.

As, by some curious reason which is beyond us to divine, we were not even called before the stewards of the Club to make a statement, and as by the published findings of those stewards it seems they inferred

(a) That we had received a proper communication of the decision of the Club, and

(b) That with this knowledge in our possession we had deliberately over-ridden it and allowed M. Brindejone to start,

We request in mere justice to ourselves that the facts as related above shall be given the same publicity as was given to incorrect versions in sundry aeronautical and other publications of the attitude we had adopted in the matter.

166, Piccadilly,

November 17th, 1913.

HARRY DELACOMBE.
H. E. WATKINS.

A Question of which "Dope."

[1813] It has come to our knowledge that certain aeroplane dope manufacturers other than ourselves claim that the Morane-Saulnier machines used by Garros on his France-Africa flight across the Mediterranean, and by Hamel in the London Aerial Derby, were doped with their productions.

We have to point out that this is incorrect, as 95 per cent. of both these machines were doped throughout with Emallite Aeroplane Dope No. 6 manufactured by our Paris house.

Further, the Maurice Farman biplane flown by Pierre Verrier, and the Morane-Saulnier monoplane flown by Hamel on last Saturday week, and first and second respectively in the Hendon-Brighton-Hendon Race, were also doped with Emallite aeroplane dope.

In justice to our French house and ourselves we shall be much obliged if you will publish this letter in your next issue.

THE BRITISH EMALLITE CO. LTD.,
W. RIDLEY PRENTICE, Managing Director.



Busteed as a Wind Fighter.

SOME remarkable flying in high winds was carried out by Busteed on one of the new Bristol tractor machines at Filton last week. On Tuesday week he was out in a wind blowing fully 45 miles an hour, the gusts at times being even greater, while on Thursday, Friday and Saturday, in very boisterous weather, he made some wide cross-country circuits.

Lectures and Lantern Slides.

THE directors of the London Aerodrome are preparing a number of slides of aeroplane subjects, and will be pleased to loan these for the purpose of illustrating lectures on aviation during the winter months. Applications should be addressed to "Lecture," the London Aerodrome Offices, 166, Piccadilly, W.



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Aeronautical Patents Published.

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24,319. F. O. WHITTAKER and B. G. BOWDEN. Aeroplanes.

Applied for in 1913.

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5,099. A. PITTMAN. Aeroplanes.

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